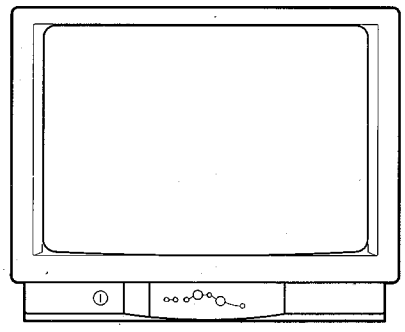
GoldStar

COLOUR TV SERVICE MANUAL

CAUTION

BEFORE SERVICING THE CHASSIS, READ THE "SAFETY PRECAUTIONS" IN THIS MANUAL.



CHASSIS : PC-31A

MODEL : CK-20A90X

GoldStar

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SAFETY PRECAUTIONS

WARNING : BEFORE SERVICING THIS CHASSIS, READ THE "X-RAY RADIATION PRECAUTIONS", SAFETY INSTRUCTIONS" AND "PRODUCT SAFETY NOTICE" DESCRIBED BELOW.

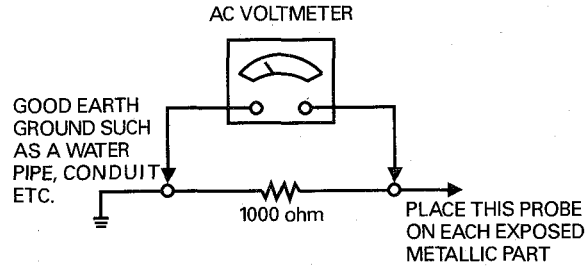
X-RAY RADIATION PRECAUTIONS

1. Excessive high voltage can produce potentially hazardous X-RAY RADIATION. To avoid such hazards, the high voltage must not be above the specified limit. The nominal value of the high voltage of this receiver is 27.5KV at Zero beam current (minimum brightness) under specified power source. The high voltage must not, under any circumstances, exceed 28.5KV. Each time a receiver requires servicing, the high voltage should be checked. It is recommended the reading of the high voltage be recorded as a part of the service record. It is important to use an accurate and reliable high voltage meter.
2. The only source of X-RAY RADIATION in this TV receiver is the picture tube. For continued X-RAY RADIATION protection, the replacement tube must be exactly the same type tube as specified in the parts list.
3. Some parts in this receiver have special safety-related characteristics for X-RAY RADIATION protection. For continued safety, parts replacement should be undertaken only after referring to the PRODUCT SAFETY NOTICE below.

SAFETY INSTRUCTIONS

1. Potential as high as 23,000-27,500 volts is present when this receiver is operating. Operation of the receiver outside the cabinet or with the back cover removed involves a shock hazard from the receiver.
   (1) Servicing should not be attempted by anyone who don't know the precautions necessary through and through when working on high-voltage equipment.
   (2) Always discharge the picture tube anode to the CHASSIS GROUND to reduce the shock hazard before removing the anode cap.
   (3) Perfectly discharge the high potential of the picture tube before handling.
   (WARNING: Risk of implosion. Handle with care.)
2. If any fuse in this TV receiver is blown, replace it with the FUSE specified in the chassis parts list only.
3. When replacing parts or circuit boards, wind the lead wires around terminals before soldering.
4. When replacing a high wattage resistor (oxide metal film resistor) in circuit board, keep the resistor 10 mm away from circuit board.
5. Keep wires away from high voltage or high temperature components.
6. Before returning the set to the customer, always perform an AC leakage current check on the exposed metallic parts of the cabinet, such as antennas, terminals, screwheads, metal overlays, control shafts, etc., to be sure the set is safe to operate without danger of electrical shock. Since this TV has AVC (Automatic Voltage Control) circuit, it may be operated nonadjustably within the voltage area indicated in the label attached at back cover. (Do not use a line isolation transformer during this check).
   Use an AC voltmeter having 1000 ohms per volt or more sensitivity in the following manner.
   Connect a 1000 ohm resistor between a known good earth ground, (water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the AC voltage across the combination of 1000 ohm resistor. Reverse the AC plug at the AC outlet and repeat AC voltage measurements for each exposed metallic part. Voltage measured must not exceed 1 volt RMS. This corresponds to 1 mA. AC. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.

AC Leakage Test



PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed without being noticed by a visual inspection and the X-RAY RADIATION protection afforded by some of them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by ⚠ marks on the schematic diagram and the replacement parts list.
Before replacing any of these components, read the parts list in this manual carefully. The use of substitute replacement parts which do not have the same safety characteristics as specified in the parts list may create X-RAY RADIATION.

SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.
NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
      CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
   d. Discharging the picture tube anode.
2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe. Do not test high voltage by "drawing an arc".
3. Discharge the picture tube anode only by (a) first connecting one end of an insulated clip lead to the degaussing or kine aquadag grounding system shield at the point where the picture tube socket ground lead is connected, and then (b) touch the other end of the insulated clip lead to the picture tube anode button, using an insulating handle to avoid personal contact with high voltage.
4. Do not spray chemicals on or near this receiver or any of its assemblies.
5. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable nonabrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
6. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
7. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
8. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
9. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heatsink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some fieldeffect transistors and semicounductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminium foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminium foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the bruching together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500° F to 600° F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wirebristle (0.5 inch, or 1.25cm) brush with a metal handle. Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500° F to 600° F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
      CAUTION: Work quickly to avoid overheating the circuitboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500° F to 600° F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.

c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
CAUTION: Work quickly to avoid overheating the circuit board printed foil.
d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement
Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal
1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement
1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush. (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement
1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement
1. Heat and remove all solder from around the transistor leads.
2. Remove the heatsink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heatsink.

Diode Removal/Replacement
1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendiculaly to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement
1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair
Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections
To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections
Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife. Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side. Carefully crimp and solder the connections.
CAUTION: Be sure the insulated jumper wire is dressed so that it does not touch components or sharp edges.

SPECIFICATIONS

Note : Specifications and others are subject to change without notice.

- **Video input system :**

PAL-B/G	O	PAL-D/K	O
SECAM-B/G	O	SECAM-D/K	O
PAL-I			

- **Power requirements :**
  230Vac±20%, 50 HZ

- **Power consumption :**
  14" (70W), 20" (80W), 21" (85W)

- **Intermediate Frequency (unit : MHZ)**

Carrier	PAL-B/G	PAL-D/K	PAL-I	SECAM-B/G	SECAM-D/K
Vision (Vc)	38.9	38	39.5	38.9	38
Sound (Sc)	33.4	32	33.5	33.4	32
Color (Cc)	34.47	33.57	35.07	Vc-4.25 Vc-4.40625	Vc-4.25 Vc-4.40625

- **Tuning system :**
  VS (Voltage Synthesizer), 40 Program memory

- **Tuning Range**

Band	For TV	For CATV	Remarks
VHF-LOW	Ch 1-5	S1'-S3', S1	
VHF-HIGH	Ch 6-12	S2-S10, S11-S20	
HYPER		S21-S41	option
UHF	Ch 21-69		

- **Antenna input impedance :** VHF/UHF 75 ohm, Unbalanced

- **Voice coil impedance :** 8 ohm

- **OSD (On Screen Display) :** Menu method

- **Sound output :** (At 50 KHZ Deviation)
  14" : 1.0W typ-1.5W max.
  19"-21" : 2.0W typ-4.0W max.

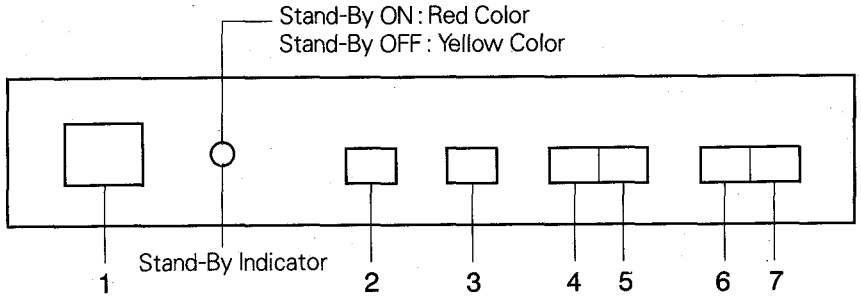
- **Local buttons :** Menu / OK / Volume up(+) / down(-) / Program up(+) / down(-)

- **External (through Euro-Socket) :**
  Audio in : 0.5 Vrms± 3dB, over 10Kohm
  Audio out : 0.5 Vrms ± 3dB, below 1Kohm.
  Video in/out : 1 Vp-p ± 3dB, 75 ohm
  R.G.B. in : 0.7 Vp-p ± 3dB

- **Function :** Auto Program
  Manual Program
  Auto Sleep
  Quick View
  Child Lock : In case of choosing Lock On, you can power on/off only with Remote Controller
  Teletext (FLOF/TOP/LIST)-OPTION

CONTROL DESCRIPTIONS

- **Local control**



NO	Button's Name	Description
1	MAIN POWER	To turn the TV power on
2	MENU	To show control menu ※ Refer to below <MENU Reference>
3	OK	To keep every selected status into memory
4	VOLUME DOWN	To decrease (-) volume
5	VOLUME UP	To increase (+) volume
6	PROGRAM DOWN	To change program No downwards
7	PROGRAM UP	To change program No upwards

<MENU Reference>

TYPE	OSD (On Screen Display)	Reference
Menu 1	☞ ◑ IIIIIIIIIIIIIII···· ☼ IIIIIIIIII····· ◕ IIIIIIIII·····	Contrast Brightness colour
Menu 2	☞ MODE [TV] (or [1←]) LOCK OFF (or ON) AUTO SLEEP OFF (or ON) OFF TIME – – : – – ☞ ON TIME – – : – –	● (TV or AV) ● ●
Menu 3	FINE TUNING AUTO PROGRAM MANUAL PROGRAM PR SKIP OFF (or ON) FORCED AV OFF (or ON)	 ● ●

- Use PROGRAM DOWN/UP, to select each one function in every Menus.

- To change analogue level in Menu 1 or
  To change status of each marked (●) in above Reference Column, you can use VOLUME DOWN/UP buttons.

NOTE : To keep every selected status in memory, press OK button.

DISASSEMBLY INSTRUCTIONS

Important note

This set is disconnected from the power supply through the converter transformer. An isolating transformer is necessary for service operations on the primary side of the converter transformer.

Back Cabinet Removal

Remove 4 screws residing on the back cabinet and carefully separate the back cabinet from the front cabinet.

CPT Removal

1. Pull out the CPT board from the CPT neck.
2. Place the front cabinet on soft material not to mar the front surface or damage control knobs.
3. Remove 4 screws securing the picture tube mounting brackets to the front cabinet.
4. Carefully separate CPT from the front cabinet.

Main Chassis Removal

After pushing and shifting to the left side the latch of the main chassis, pull the main chassis backward smoothly.

Speaker Assy Removal

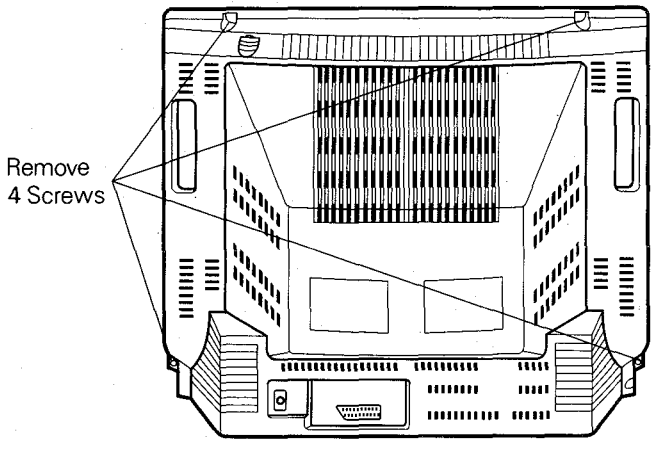
1. Remove P601 connector between the speaker and the main chassis.
2. Remove 4 screws holding speaker to the front cabinet.

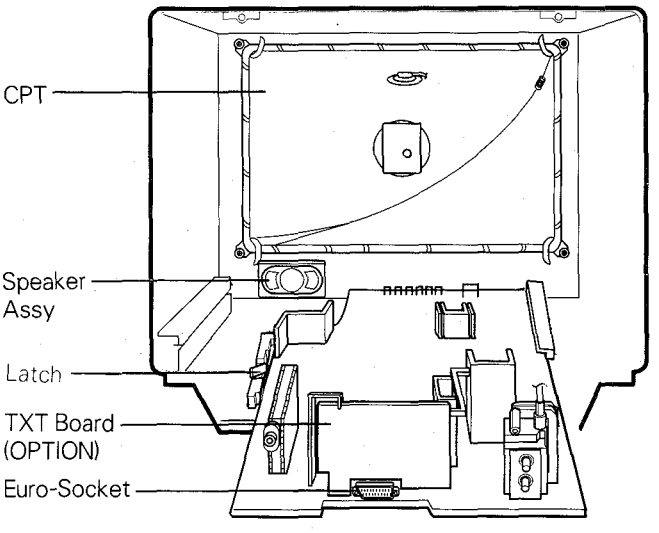
TXT BOARD Removal

Grasp the center area of the TXT board and then pull it up.

PICTURE TUBE HANDLING CAUTION

Due to high vacuum and large surface area of picture tube, great care must be exercised when handling picture tube. Always lift picture tube by grasping it firmly around faceplate.
NEVER LIFT TUBE BY ITS NECK! The picture tube must not be scratched or subjected to excessive pressure as fracture of glass may result in an implosion of considerable violence which can cause personal injury or property damage.



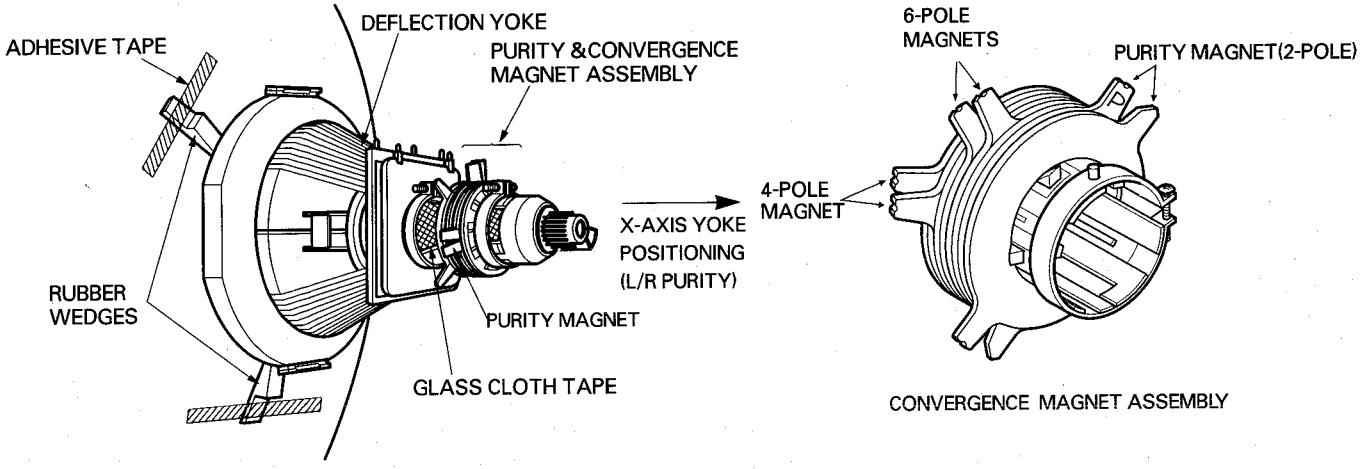


PURITY & CONVERGENCE ADJUSTMENT

Caution:
Convergence and Purity have been factory aligned. Do not attempt to tamper with these alignments.
However, the effects of adjacent receiver components, or replacement of picture tube or deflection yoke may require the need to readjust purity any convergence.

5. Reconnect the internal degaussing coil.

6. Position the beam bender locking rings at the 9 o'clock position and the other three pairs of tabs (2,4 and 6 pole magnets) at the 12 o'clock position.



• Purity Adjustment

This procedure DOES NOT apply to bonded yoke and picture tube assemblies.
The instrument should be at room temperature (60 degrees F or above) for six (6) hours and be operating at low beam current (dark background) for approximately 20 to 30 minutes before performing purity adjustments.

CAUTION: Do not remove any trim magnets that may be attached to the bell of the picture tube.

1. Remove the AC power and disconnect the internal degaussing coil.

2. Remove the yoke from the neck of the picture tube.

3. If the yoke has the tape version beam bender, remove it and replace it with a adjustable type beam bender (follow the instructions provided with the new beam bender)

4. Replace the yoke on the picture tube neck, temporarily remove the three (3) rubber wedges from the bell of the picture tube and then slide the yoke completely forward.

7. Perform the following steps, in the order given, to prepare the receiver for the purity adjustment procedure.

   a. Face the receiver in the "magnetic north" direction.

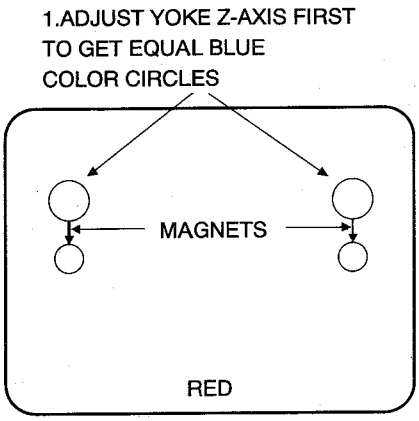
   b. Externally degauss the receiver screen with the television power turned off.

   c. Turn the television on for approximately 10 seconds to perform internal degaussing and then turn the TV off.

   d. Unplug the internal degaussing coil. This allows the thermistor to cool down while you are performing the purity adjustment. DO NOT MOVE THE RECEIVER FROM ITS "MAGNETIC NORTH" POSITION.

   e. Turn the receiver on and obtain a red raster by increasing the red bias control (CW) and decreasing the bias controls for the remaining two colors (CCW).

   f. Attach two round magnets on the picture tube screen at 3 o'clock and 9 o'clock positions, approximately one (1) inch from the edge of the mask (use double-sided tape).



8. Referring to above, perform the following two steps:
   a. Adjust the yoke Z-axis to obtain equal blue circles.
   b. Adjust the appropriate beam bender tabs to obtain correct purity (four equal circles).

9. After correct purity is set, tighten the yoke clamp screw and remove the two screen magnets.

10. Remove the AC power and rotate the receiver 180 degrees (facing "magnetic south").

11. Reconnect the internal degaussing coil.

12. Turn the receiver on for 10 seconds (make sure the receiver came on) to perform internal degaussing, and then turn the receiver off.

13. Unplug the internal degaussing coil.

14. Turn on the receiver and check the purity by holding one round magnet at the 3 o'clock and a second round magnet at 9 o'clock position. If purity is not satisfactory, repeat steps 8 through 14.

15. Turn off the receiver and reconnect the internal degaussing coil.

● Convergence Adjustment

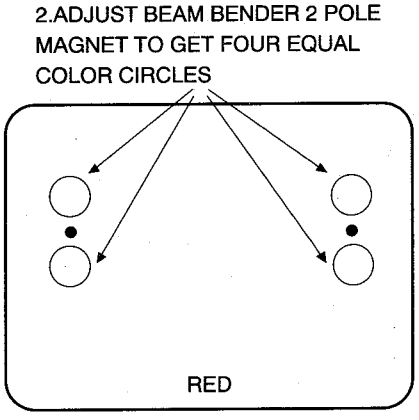
Caution: This procedure DOES NOT apply to bonded yoke and picture tube assemblies.
Do not use screen magnets during this adjustment procedure. Use of screen magnets will cause an incorrect display.

1. Remove AC power and disconnect the internal degaussing coil.

2. Apply AC Power and set the brightness to the Picture Reset condition. Set the Color control to minimum.

3. Applying 8V to the pin42 of IC501.

4. Adjust the Red, Green and Blue Bias controls to get a dim white line.



5. Remove the AC power and all jumpers.

6. Reconnect the internal degaussing coil and apply AC power.

7. Turn the receiver on for 10 seconds to perform internal degaussing and then turn the receiver off again.

8. Unplug the internal degaussing-coil.

9. Turn on the receiver, connect a signal generator to the VHF antenna terminal and apply a crosshatch signal.

Caution: During the convergence adjustment procedure, be very careful not to disturb the purity adjustment tabs are accidentally move, purity should be confirmed before proceeding with the convergence adjustments.

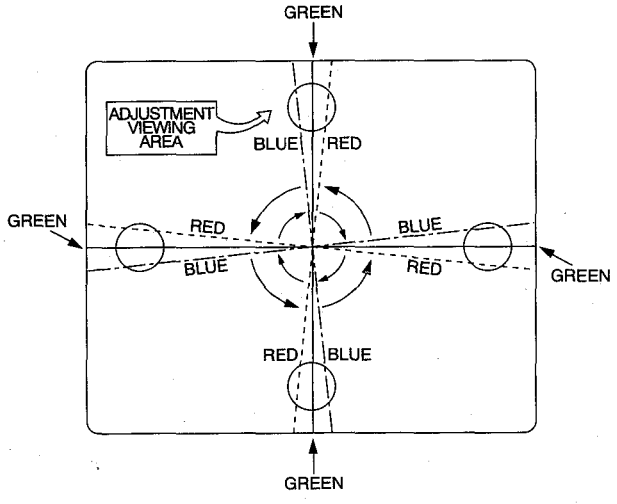
Note: Make sure the focus is set correctly on this instrument before proceeding with the following adjustment.

10. Converge the red and blue vertical lines to the green vertical line at the center of the screen by performing the following steps (below TABLE).
    a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in opposite directions from the 12 o'clock position to converge the red and blue vertical lines.
    b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in opposite directions form the 12 o'clock position to converge the red and blue (now purple) vertical lines with the green vertical line.

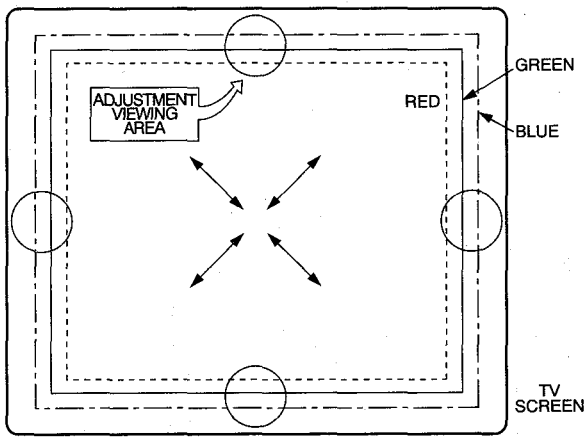
11. Converge the red and blue horizontal with the green line at the center of the screen by performing the following steps. (below TABLE)
    a. Carefully rotate both tabs of the 4-pole ring magnet simultaneously in the same direction (keep the spacing between the two tabs the same) to converge the red and blue horizontal lines.
    b. Carefully rotate both tabs of the 6-pole ring magnet simultaneously in same direction (keep the spacing between the two tabs the same) to converge the red and blue (now purple) horizontal lines with the green horizontal line.
    c. Secure the tabs previsouly adjusted by locking them in place with the locking tabs on the beam bender.

RING PAIRS	ROTATION DIRECTION OF BOTH TABS	MOVEMENT OF RED AND BLUE BEAMS
4 POLE	OPPOSITE	B R OR B R
	SAME	B R OR B R
6 POLE	OPPOSITE	B R OR B R
	SAME	B R OR B R

UP/DOWN ROCKING OF THE YOKE CAUSES OPPOSITE ROTATION OF RED AND BLUE RASTERS

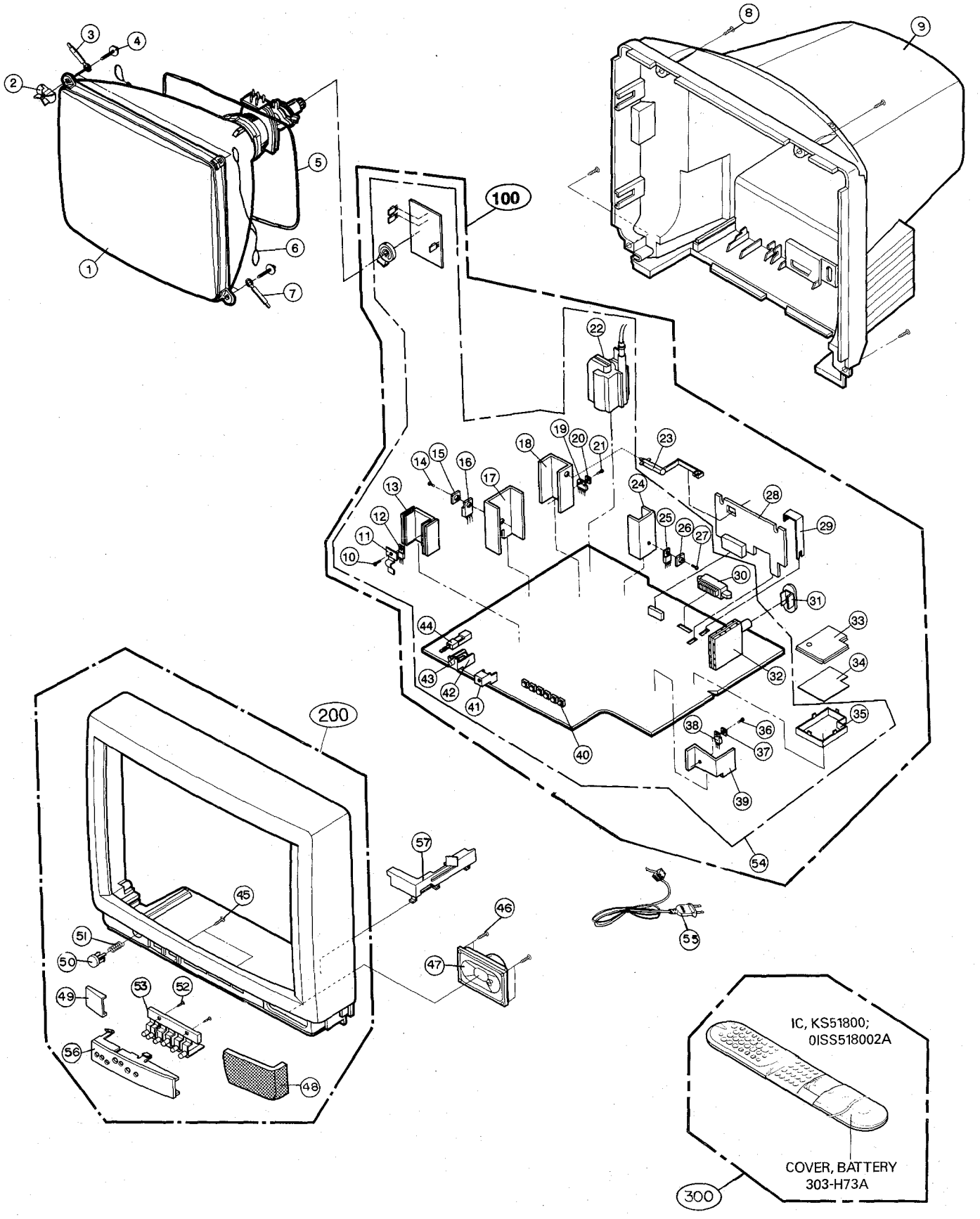


LEFT/RIGHT ROCKING OF THE YOKE CAUSES OPPOSITE SIZE CHANGE OF THE RED AND BLUE RASTERS



12. While watching the 6 o'clock positions on the screen, rock the front of the yoke in a vertical (up/down) direction to converge the red and blue vertical lines. (Fig upper left)
13. Temporarily place a rubber wedge at the 12 o'clock position to hold the vertical position or the yoke.
14. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue horizontal lines are converged.
    If the lines are not converged, slightly offset the vertical tilt of the yoke (move the rubber wedge if necessary) to equally balance the convergence error of the horizontal lines at 3 o'clock and 9 o'clock and the vertical lines at 6 o'clock and 12 o'clock.
15. Place a 1.5 inch piece of glass tape over the rubber foot at the rear of the 12 o'clock wedge.
16. While watching the 6 o'clock and 12 o'clock areas of the screen, rock the front of the yoke in the horizontal (left to right) motion to converge the red and blue horizontal lines. (Fig. upper right)
17. Temporarily place a rubber wedge at the 5 o'clock and 7 o'clock positions to hold the horizontal position of the yoke.
18. Check the 3 o'clock and 9 o'clock areas to confirm that the red and blue vertical lines are converged. If the lines are not converged, slightly offset the horizontal tilt of the yoke (move the temporary rubber wedges if necessary) to equally balance the convergence error of the horizontal lines at 6 o'clock and 12 o'clock and the vertical lines at 3 o'clock and 9 o'clock.
19. Using a round magnet confirm purity at the center, right and left sides and corners. See Purity Adjustment Procedure.
20. Reconfirm convergence and apply a 1.5 inch piece of glass tape over the rubber foot at the rear of the 5 o'clock and the 7 o'clock wedges.

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

NO		DESCRIPTION	P/N(20")	P/N(21")
⚠	1	CPT	112-C20B(*)	2055-00672D
	2	SEAT, RUBBER	NOT IN USE	
	3	HOLDER, D-COIL (L=65)	341-721A	
	4	SCREW ASSY, HEXAGON HEAD	332-057B	
⚠	5	COIL, DEGAUSSING	150-438J	150-438K
⚠	6	LEAD SET, ASSY CPT EARTH	170-704N	170-799C
	7	HOLDER	341-721B	
	8	SCREW	1PTF0403116	
	9	COVER, BACK	303-H38G	303-H37D
	10	SCREW	1BPF0302016	
	11	SPRING, PLATE	320-173A	
	12	TRANSISTOR BUZ-90	0TR900000AA	
	13	PLATE, HEAT SINK	407-E60G	
	14	SCREW	1BPF0302816	
	15	WASHER	334-036A	
	16	TRANSISTOR KTD-1555	0TR155500AA	
	17	PLATE, HEAT SINK	407-K24C	
	18	PLATE, HEAT SINK	407-M04D	
	19	IC, SANYO LA7833	0ISA783300A	
	20	WASHER	334-036A	
	21	SCREW	1BWF0302616	
⚠	22	FBT	154-106C	154-194D
	23	SUPPORTER SECAM BOARD	NOT IN USE	
	24	PLATE, HEAT SINK	407-289F	
	25	IC, KEC KIA7812P	0IKE781200A	
	26	WASHER	334-036A	
	27	SCREW	1BPF0302816	
	28	TXT BOARD	110-X45BG	
	29	SUPPORTER TXT	343-A76A	
	30	SCART-21 PINS	381-091A	
	31	COVER, TUNER	303-F62A	
	32	TUNER	113-238D	
	33	COVER, SHIELD	303-H07A	
	34	PLATE, SHIELD	407-Q69A	
	35	CASE, SHIELD	302-719A	
	36	SCREW	1BPF0302816	
	37	WASHER	334-036A	
	38	IC, SGS-THOMSON TDA 2006	0ISG200600A	
	39	PLATE, HEAT SINK	407-Q58A	
	40	SWITCH TACT	140-315B	
	41	PRE-AMP	106-047B	
	42	HOLDER, LED	341-783A	
	43	DIODE, LED	0DL200000CA	
⚠	44	SWITCH, MAIN	140-278C	
	45	SCREW	1PTF0402816	
	46	SCREW	1PRF0302816	
	47	SPEAKER ASSY	120-C93F	
	48	GRILL, SPEAKER	314-320A	314-316A
	49	WINDOW, DISPLAY	316-426A	
	50	BUTTON, POWER	441-365A	
	51	SPRING, COIL	320-062F	
	52	SCREW	1PRF0302816	
	53	BUTTON , CONTROL	441-364A	
	54	PCB ASSY, MAIN	109-117K	109-117H
	55	CORD ASSY, POWER	174-171H	
	56	PANEL ASSY, CONTROL	313-286A	
	57	BRACKET CHA. RAIL	340-369A	

SUB ASSY

100	CHASSIS ASSY, MAIN	309-A83J	309-A83H
200	CABINET ASSY	300-B26G	300-B25E
300	TRANSMITTER ASSY	105-212D	

Since the parts which is marked with " * " in this Exploded View parts list is local parts, do not order them to Korea.

REPLACEMENT PARTS LIST

SAFETY PARTS LIST OF PC-31A CHASSIS ⚠

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These characteristics are often passed without being noticed by a visual inspection and the X-RAY RADIATION protection afforded by some of them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified by ⚠ marks on the circuit diagram. Before replacing any these components, read the specification of the part carefully. The use of substitute replacement parts which do not have the same characteristics as specified in this parts list may create X-RAY RADIATION.

LOCA. NO	DESCRIPTION
DB801	DIODE
C805	CAPACITOR
C851	CAPACITOR
C852	CAPACITOR
C853	CAPACITOR
C854	CAPACITOR
FR401	RESISTOR, FUSIBLE
FR402	RESISTOR, FUSIBLE
FR403	RESISTOR, FUSIBLE
FR404	RESISTOR, FUSIBLE
FR405	RESISTOR, FUSIBLE
FR406	RESISTOR, FUSIBLE
FR601	RESISTOR, FUSIBLE
FR802	RESISTOR, FUSIBLE
FR803	RESISTOR, FUSIBLE
F801	FUSE
L851	COIL
Q801	TRANSISTOR
R851	RESISTOR
SW801	SWITCH
TH801	THERMISTOR
T401	FBT
T801	TRANSFORMER
	POWER SWITCH
	COLOR PICTURE TUBE(CPT)
	COIL, DEGAUSSING
	DEFLECTION YOKE(DY)

All of the parts which are marked with "R" in the "AL" column of this replacement parts list are in the remote control unit. "C" are TIC 03 on the back side of the Teletext Board.

[REPLACEMENT PARTS LIST] PAGE : 1

RUN-DATE : 94.04.23

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
	R		0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
	C		0CK2210K515	C,CERAMIC(HIGH DIELE)	220P 50V K	
	C		0CK4710K515	C,CERAMIC(HIGH DIELE)	470P 50V K	
	R		0ISS518002A	IC,SAMSUNG SEMICONDUCTOR	KS51800-24(OHS2209P)20SOP TX	
			1PTF0403116	SCREW,TRUSS HEAD TAP TITE +	"P" TYPE D4 L16 MSWR3/BK	
			105-212D	TRANSMITTER	ASSY,UNIFIED(PC-31A,TXT)	
			109-117H	PCB ASSY	MAIN(PC31A,LUK21" CKD)(M-IN)	21
			109-117K	PCB ASSY	MAIN(PC31A,LUK20"CKD)(M-IN)	20
			110-X45BG	PCB ASSY	TXT (PC31A) M-IN(EAST)	
			120-C93F	SPEAKER	05F14BRC 8 OHM 3W*5W 50*90	
			132-199D	ANTENNA	ROD(W/ADAPTER L=650)	
			150-438J	COIL	DEGAUSSING,21"(D) SHORT LEAD	20
			150-438K	COIL	DEGAUSSING,21"60T 120HM	21
	R		166-015U	FILTER	KBR455BKTLR(WASHABLE)	
			170-704N	LEAD SET	CPT EARTH	20
			170-799C	LEAD SET	ASSY,CPT EARTH (19")	21
			174-003L	CORD	POWER K-KOK 2400	
			174-171H	CORD	ASSY,POWER(003L,CKD)	
			2055-00672D	CPT	A51KPD12XX 14N7KD	21
			300-B25F	CABINET ASSY	CABINET ASSY,(CP-21A90 WPGRB)	21
			300-B26G	CABINET ASSY	KCB20A90E PPCRI2	20
			302-719A	CASE	SHIELD (PC-31A)	
			303-F62A	COVER	TUNER	
			303-H07A	COVER	SHIELD (PC-31A)	
			303-H37D	COVER	ASSY,BACK(SCK21A90X)	21
			303-H38G	COVER	ASSY,BACK(CKD,759A)	20
			303-H73A	COVER	BATTERY (105-212)	
			305-002D	HOUSING	2P AMP 171157-1 (10)	
			309-A83H	CHASSIS ASSY	MAIN(PC31A,LUKAS21")CKD W/TXT	21
			309-A83J	CHASSIS ASSY	MAIN(PC31A,LUKAS20")CKD,W/TXT	20
			313-286A	PANEL	ASSY CONTROL(CB-21A90X)	
			314-316A	GRILL	SPEAKER (CB-21A90X)	21
			314-320A	GRILL	SPEAKER(CB-20A90X)	20
			316-426A	WINDOW	DISPLAY (CB-21A90X)	
			320-062F	SPRING	KNOB	
			332-057B	SCREW	ASSY,HEXAGON HEAD	
			340-369A	BRACKET	CHA.RAIL CIT-9172/75	
			341-184D	HOLDER	LEAD TWISTER	
			341-242F	HOLDER	POWER CORD	
			341-721A	HOLDER	D-COIL (FOR AUTO.L=65)	
			341-721B	HOLDER	D-COIL (FOR AUTO.L=130)	
			343-A76A	SUPPORTER	TXT BOARD(PC-31A)	
			347-649A	BAND	CABLE TIES	
			372-Q14D	BOX	INNER SCK20A90X UPGRJ2	
			387-457X	CONNECTOR ASSY	ASSY,3P(IL-G)	
			410-618B	MARK	BRAND(H/STAMPING,20",SILVER)	
			441-364A	BUTTON	CONTROL (CB-21A90X)	
			441-365A	BUTTON	POWER (CB-21A90X)	
			482-G63B	INSTRUCTIONS(OWNER'S MANUAL)	PC31A,GS,E/G,212A/210B TX	
		C01	0CX4700K409	C,TUBULA(T.C)	47PF 50V J	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C02	0CE1066K618	C,ELECTROLYTIC	10MF SMS 50V M	
		C03	0CN1020K519	C,TUBULA(HIGH DIELE)	1000PF 50V K	
		C08	0CN2230H949	C,TUBULA(HIGH DIELE)	22000P 25V Z F	
		C10	0CN2230H949	C,TUBULA(HIGH DIELE)	22000P 25V Z F	
		C11	0CE1066F618	C,ELECTROLYTIC	10MF SMS 16V M	
		C111	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C112	0CQ2231N509	C,POLYESTER(MYLAR)	0.022MF 100V K	
		C113	0CE2256K618	C,ELECTROLYTIC	2.2MF SMS 50V M	
		C114	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C12	0CN1040K949	C,TUBULA(HIGH DIELE)	0.1M 50V Z	
		C13	0CX1500K409	C,TUBULA(T.C)	15PF 50V J	
		C14	0CC1500K415	C,CERAMIC(TEMP COMP)	15P 50V J	
		C15	0CC1500K415	C,CERAMIC(TEMP COMP)	15P 50V J	
		C17	0CN2230H949	C,TUBULA(HIGH DIELE)	22000P 25V Z F	
		C18	0CN2210K519	C,TUBULA(HIGH DIELE)	220PF 50V K	
		C181	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C182	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C183	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C184	0CE1066F618	C,ELECTROLYTIC	10MF SMS 16V M	
		C185	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C186	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C187	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C188	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C189	0CE4746K618	C,ELECTROLYTIC	0.47MF SMS 50V M	
		C19	0CN1040K949	C,TUBULA(HIGH DIELE)	0.1M 50V Z	
		C20	0CN1010K519	C,TUBULA(HIGH DIELE)	100PF 50V K	
		C202	0CX1200K409	C,TUBULA(T.C)	12PF 50V J	
		C203	0CE1066F618	C,ELECTROLYTIC	10MF SMS 16V M	
		C21	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C212	0CX4700K409	C,TUBULA(T.C)	47PF 50V J	
		C22	181-444J	C,METALPOLYESTER	0.22MF 50V J	
		C223	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C224	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C225	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C226	0CN1040K949	C,TUBULA(HIGH DIELE)	0.1M 50V Z	
		C227	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C228	0CK2230K945	CAPACITOR CERAMIC(HIGH DIELE)	0.022M 50V Z F TS	
		C23	0CQ2221N509	C,POLYESTER(MYLAR)	0.0022U 100V K	
		C231	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C232	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C24	0CE3376D618	C,ELECTROLYTIC	330M SMS 10V M	
		C25	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C252	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C255	0CE1066F618	C,ELECTROLYTIC	10MF SMS 16V M	
		C256	0CQ1021N509	C,POLYESTER(MYLAR)	0.001U 100V K	
		C258	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C259	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C260	0CK1030K945	C,CERAMIC(HIGH DIELE)	0.01MF 50V Z	
		C27	0CE1066F618	C,ELECTROLYTIC	10MF SMS 16V M	
		C277	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C28	0CE1076D618	C,ELECTROLYTIC	100MF SMS 10V M	
		C281	0CX4700K409	C,TUBULA(T.C)	47PF 50V J	
		C282	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C283	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C284	0CX1800K409	C,TUBULA(T.C)	18PF 50V J	
		C285	0CX4700K409	C,TUBULA(T.C)	47PF 50V J	
		C29	0CE4776F618	C,ELECTROLYTIC	470MF SMS 16V M	
		C30	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C301	0CQ4721N409	C,POLYESTER(MYLAR)	4700PF 100V J	
		C302	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C31	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C311	0CX1000K409	C,TUBULA(T.C)	10P 50V J	
		C312	0CQ1021N509	C,POLYESTER(MYLAR)	0.001U 100V K	
		C313	0CE477BJ618	C,ELECTROLYTIC	470UF KME (RG) 35V	
		C314	0CE227BJ618	CAPACITOR,ELECTROLYTIC	220U KME 35V M FL TP5	
		C315	0CE476BK618	CAPACITOR,ELECTROLYTIC	47UF KME 50V M FL TP5	
		C316	0CQ1041N509	C,POLYESTER(MYLAR)	0.1MF 100V L	
		C317	0CE1086J618	C,ELECTROLYTIC	1000M SMS 35V M	
		C318	0CE1056K618	C,ELECTROLYTIC	1.0MF SMS 50V M	
		C32	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C321	181-0321	CAPACITOR,TANTAL	1.0MF 25V K TAPING	
		C322	0CE1066K618	C,ELECTROLYTIC	10MF SMS 50V M	
		C33	0CN3310K519	C,TUBULA(HIGH DIELE)	330P 50V K	
		C34	0CN1010K519	C,TUBULA(HIGH DIELE)	100PF 50V K	
		C400	0CE105BR618	C,ELECTROLYTIC	1UF KME 250V M	
		C401	0CC8210K405	CAPACITOR CERAMIC(TEMP COMP)	820P 50V J SL TS	
		C403	0CQ1031N509	C,POLYESTER(MYLAR)	0.01U 100V K	
		C404	0CE105BR618	C,ELECTROLYTIC	1UF KME 250V M	
		C411	0CC47111545	C,CERAMIC(TEMP COMP)	470PF 105C 1KV K	
		C412	0CE1086J618	C,ELECTROLYTIC	1000M SMS 35V M	
		C413	0CC47111545	C,CERAMIC(TEMP COMP)	470PF 105C 1KV K	
		C414	0CE227BJ618	CAPACITOR,ELECTROLYTIC	220U KME 35V M FL TP5	
		C415	0CE2276F618	C,ELECTROLYTIC	220MF SMS 16V M	
		C416	0CK4710W515	C,CERAMIC(HIGH DIELE)	470PF 500V K	
		C417	0CE3366K618	C,ELECTROLYTIC	33MF SMS 50V M	
		C418	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C421	181-452F	C,METAL POLYPROPYLENE	1.6KV 8200PF H	
		C422	181-128B	C,METAL POLYPROPYLENE	0.47MF 200V J	21
		C422	181-128D	C,METAL POLYPROPYLENE	0.5MF J	20
		C423	0CK4710W515	C,CERAMIC(HIGH DIELE)	470PF 500V K	
		C424	0CE2261R618	C,ELECTROLYTIC	22M SM 250V M	
		C425	181-059D	C,POLYPROPYLENE	0.047MF 200V K	
		C426	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C427	0CE105BR618	C,ELECTROLYTIC	1UF KME 250V M	
		C431	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C432	0CE2276F618	C,ELECTROLYTIC	220MF SMS 16V M	
		C433	0CQ2721N409	CAPACITOR POLYESTER(MYLAR)	2700PF 100V J POLY TP	
		C434	0CQ4721N409	C,POLYESTER(MYLAR)	4700PF 100V J	
		C435	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C436	0CE1056K618	C,ELECTROLYTIC	1.0MF SMS 50V M	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C501	0CE1066F618	C,ELECTROLYTIC	10MF SMS 16V M	
		C502	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C503	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C504	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C505	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C506	0CE2256K618	C,ELECTROLYTIC	2.2MF SMS 50V M	
		C507	0CE2266F618	C,ELECTROLYTIC	22MF SMS 16V M	
		C508	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C511	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C512	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C513	0CQ4721N409	C,POLYESTER(MYLAR)	4700PF 100V J	
		C514	0CQ1021N509	C,POLYESTER(MYLAR)	0.001U 100V K	
		C515	0CC1500K415	C,CERAMIC(TEMP COMP)	15P 50V J	
		C516	0CQ1021N509	C,POLYESTER(MYLAR)	0.001U 100V K	
		C517	0CQ1021N509	C,POLYESTER(MYLAR)	0.001U 100V K	
		C518	0CK2230K945	CAPACITOR CERAMIC(HIGH DIELE)	0.022M 50V Z F TS	
		C521	0CK2230K945	CAPACITOR CERAMIC(HIGH DIELE)	0.022M 50V Z F TS	
		C522	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C524	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C525	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C526	181-444J	C,METALPOLYESTER	0.22MF 50V J	
		C527	0CK2230K945	CAPACITOR CERAMIC(HIGH DIELE)	0.022M 50V Z F TS	
		C528	0CE2256K618	C,ELECTROLYTIC	2.2MF SMS 50V M	
		C531	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C532	0CQ1031N509	C,POLYESTER(MYLAR)	0.01U 100V K	
		C533	0CQ1031N509	C,POLYESTER(MYLAR)	0.01U 100V K	
		C534	0CQ1031N509	C,POLYESTER(MYLAR)	0.01U 100V K	
		C535	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C536	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C538	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		C539	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C550	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C551	0CK2230K945	CAPACITOR CERAMIC(HIGH DIELE)	0.022M 50V Z F TS	
		C59	0CN1030F679	C,TUBULA(HIGH DIELE)	0.01MF 16V M	
		C601	0CE1066K618	C,ELECTROLYTIC	10MF SMS 50V M	
		C602	181-444G	C,METALPOLYESTER	0.15MF 50V (TR)	
		C603	0CE2256K618	C,ELECTROLYTIC	2.2MF SMS 50V M	
		C604	0CE1066K618	C,ELECTROLYTIC	10MF SMS 50V M	
		C605	181-444E	C,METALPOLYESTER	0.1MF 50V J	
		C606	0CE4776F618	C,ELECTROLYTIC	470MF SMS 16V M	
		C607	181-444N	C,METALPOLYESTER	0.47MF 50V J	
		C608	0CE1086H618	C,ELECTROLYTIC	1000U SMS 25V M	
		C609	0CQ6821N509	C,POLYESTER(MYLAR)	0.0068U 100V K	
		C610	0CE1066K618	C,ELECTROLYTIC	10MF SMS 50V M	
		C611	0CE1066K618	C,ELECTROLYTIC	10MF SMS 50V M	
		C62	0CK1020K515	C,CERAMIC(HIGH DIELE)	1000PF 500V K	
		C801	0CK10201515	CAPACITOR,CERAMIC(HIGH DIELE)	1000P 1KV K B TS	
		C802	0CK10201515	CAPACITOR,CERAMIC(HIGH DIELE)	1000P 1KV K B TS	
		C803	0CK10201515	CAPACITOR,CERAMIC(HIGH DIELE)	1000P 1KV K B TS	
		C804	0CK10201515	CAPACITOR,CERAMIC(HIGH DIELE)	1000P 1KV K B TS	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		C805	181-474B	CAPACITOR	CE(400V/200UF)SRF LEAD TYPE	
		C806	181-415H	CAPACITOR	BOX MPF 630V 0.033MF	
		C807	0CQ8221N519	CAPACITOR POLYESTER(MYLAR)	0.0082U 100V K POLY NI TP	
		C808	0CE4766H618	C,ELECTROLYTIC	47M SMS 25V M	
		C81	0CE1056K618	C,ELECTROLYTIC	1.0MF SMS 50V M	
		C811	0CK22102515	C,CERAMIC(HIGH DIELE)	220P 2KV K	
		C812	181-444J	C,METALPOLYESTER	0.22MF 50V J	
		C814	0CE1056K618	C,ELECTROLYTIC	1.0MF SMS 50V M	
		C817	0CK4710W515	C,CERAMIC(HIGH DIELE)	470PF 500V K	
		C818	0CK4710W515	C,CERAMIC(HIGH DIELE)	470PF 500V K	
		C819	0CE4776F618	C,ELECTROLYTIC	470MF SMS 16V M	
		C82	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C820	0CE2276J618	C,ELECTROLYTIC	220M SMS 35V M	
		C821	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		C822	0CE1076J618	C,ELECTROLYTIC	100M SMS 35V M	
		C824	0CC10211545	C,CERAMIC(TEMP COMP)	1000PF 105C 1KV K	
		C825	0CC47111545	C,CERAMIC(TEMP COMP)	470PF 105C 1KV K	
		C827	0CE1071P650	C,ELECTROLYTIC	100M SM 160V M	
		C828	0CE1071P650	C,ELECTROLYTIC	100M SM 160V M	
		C850	0CK4720K515	CAPACITOR CERAMIC(HIGH DIELE)	4700P 50V K B TS	
		C851	181-408B	CAPACITOR	0.15UF(ISKRA1531)	
		C852	181-408B	CAPACITOR	0.15UF(ISKRA1531)	
		C853	181-410A	CAPACITOR,CERAMIC	4700PF A.C 125V M UL/CSA	
		C854	181-410A	CAPACITOR,CERAMIC	4700PF A.C 125V M UL/CSA	
		C901	0CN2710K519	C,TUBULA(HIGH DIELE)	270PF 50V K	
		C902	0CN2210K519	C,TUBULA(HIGH DIELE)	220PF 50V K	
		C903	0CN2210K519	C,TUBULA(HIGH DIELE)	220PF 50V K	
		C904	0CE4766F618	C,ELECTROLYTIC	47MF SMS 16V M	
		C905	0CK12202510	CAPACITOR,CERAMIC(HIGH DIELE)	1200PF 2KV K B S	
		DB801	162-045A	DIODE	BRIDGE,RB-156	
		D09	0DD414809ED	DIODE	DS4148	
		D181	0DD414809ED	DIODE	DS4148	
		D211	0DD414809ED	DIODE	DS4148	
		D301	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D302	0DD414809ED	DIODE	DS4148	
		D401	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D402	0DD410000AB	DIODE	RU4C,LF-L1 SANKEN SANKEN	
		D403	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D404	0DD414809ED	DIODE	DS4148	
		D405	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D406	0DD414809ED	DIODE	DS4148	
		D407	0DD414809ED	DIODE	DS4148	
		D408	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D409	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D410	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D411	0DD414809ED	DIODE	DS4148	
		D421	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D422	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D507	0DD414809ED	DIODE	DS4148	
		D508	0DD414809ED	DIODE	DS4148	

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S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		D601	0DD414809ED	DIODE	DS4148	
		D602	0DD414809ED	DIODE	DS4148	
		D801	0DD414809ED	DIODE	DS4148	
		D802	0DD414809ED	DIODE	DS4148	
		D803	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D804	0DD410000AB	DIODE	RU4C,LF-L1 SANKEN SANKEN	
		D805	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D806	0DD060009AC	DIODE	TVR06J 0.6A/600V 250NS	
		D807	0DD414809ED	DIODE	DS4148	
		D901	0DD414809ED	DIODE	DS4148	
		D902	0DD414809ED	DIODE	DS4148	
		D903	0DD414809ED	DIODE	DS4148	
		FR401	0RF0471H609	R,FUSIBLE	4.7 1/2W 5	
		FR402	0RF0470J607	R,FUSIBLE	0.47 1W 5%	
		FR403	0RF0561H609	R,FUSIBLE	5.6 1/2W 5	
		FR404	0RF0201J607	R,FUSIBLE	2 1W 5%	20
		FR404	0RF0391J607	RESISTOR,FUSIBLE	3.90 1W 5% TA62	21
		FR405	0RF0101H609	R,FUSIBLE	1.0 1/2W 5	
		FR406	0RF0201J607	R,FUSIBLE	2 1W 5%	20
		FR406	0RF0391J607	RESISTOR,FUSIBLE	3.90 1W 5% TA62	21
		FR601	0RF0102J607	R,FUSIBLE	10 1W 5%	
		FR802	0RF0221H609	RESISTOR FUSIBLE	2.2 1/2W 5 TA52	
		FR803	0RF0101H609	R,FUSIBLE	1.0 1/2W 5	
		F801	131-098B	FUSE	4A/250V HBC TIME DELAY 5X20	
		IC01	0IS0823402D	IC,SONY	GS8234-02D(CXP85112A-516S) 64S	
		IC02	0IAL240210A	IC,ATMEL	AT24C02-10PC 8D EEPROM(2K,IIC)	
		IC03	0IKE704200B	IC,KEC	KIA7042P 3P 4.2V RESET(TAPING)	
		IC04	0IGS780500A	IC, GOLDSTAR ELECTRON .	GL7805 REGULATOR	
		IC281	0ISA797500A	IC,SANYO	LC7975 5SIP SIF CONVERTER	
		IC301	0ISA783300A	IC,SANYO	LA7833 7SIP V/OUT 2.2A(P-P)	
		IC401	0IKE781200A	IC,KEC	KIA7812P(KIA78012AP),KEC	
		IC501	0IPH836230B	IC,PHILIPS	TDA8362B/N3 52SD P/N/S 1CHIP	
		IC502	0IPH466120A	IC,PHILIPS	TDA4661/V2 16D 1H DELAY LINE	
		IC503	0IPH839510A	IC,PHILIPS	TDA8395/N1 16D SECAM DETECTOR	
		IC504	0IMA586000A	IC,MATSUSHITA	AN5860 14D ANALOG RGB S/W	
		IC601	0ISG200600A	IC, SGS-THOMSON	TDA2006,SOUND	
		IC801	0ISM460520A	IC,SIEMENS	TDA4605-2 8DIP SMPS CONTROLER	
		JA204	381-091A	SOCKET	SCART JACK 21PIN	
		LD01	0DL200000CA	DIODE,LED	DL-2LRG RED GREEN OPTO	
		L01	0LA0561K119	INDUCTOR AXIAL LEAD	5.6UH K 2.3*3.4 TP	
		L02	0LA1000K119	INDUCTOR AXIAL LEAD	100UH K 2.3*3.4 TP	
		L08	0LA0472K119	INDUCTOR AXIAL LEAD	47UH K 2.3*3.4 TP	
		L100	150-167D	COIL	CHOKE 1.0 UH	
		L181	0LA0561K119	INDUCTOR AXIAL LEAD	5.6UH K 2.3*3.4 TP	
		L201	0LA0331K119	INDUCTOR AXIAL LEAD	3.3UH K 2.3*3.4 TP	
		L202	0LA0471K119	INDUCTOR AXIAL LEAD	4.7UH K 2.3*3.4 TP	
		L203	0LA0102K119	INDUCTOR AXIAL LEAD	10UH K 2.3*3.4 TP	
		L204	0LA0221K119	INDUCTOR AXIAL LEAD	2.2UH K 2.3*3.4 TP	
		L251	0LA1000K119	INDUCTOR AXIAL LEAD	100UH K 2.3*3.4 TP	
		L252	0LA1000K119	INDUCTOR AXIAL LEAD	100UH K 2.3*3.4 TP	

[REPLACEMENT PARTS LIST] PAGE : 7

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S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		L253	0LA1000K119	INDUCTOR AXIAL LEAD	100UH K 2.3*3.4 TP	
		L254	0LA1000K119	INDUCTOR AXIAL LEAD	100UH K 2.3*3.4 TP	
		L401	125-022K	CORE	FERRITE 1UH	
		L402	150-224C	COIL	LINEARITY	21
		L402	150-224L	COIL	LINEARITY	20
		L501	0LA1000K119	INDUCTOR AXIAL LEAD	100UH K 2.3*3.4 TP	
		L801	150-235A	COIL	H-CHOKE (TLN-3006)	
		L802	150-679E	COIL	CHOKE 10UH(NAMYANG)	
		L803	150-679D	COIL	CHOKE 100UH(NAMYANG)	
		L804	125-123A	CORE	FERRITE BFD3565R2F	
		L851	150-982A	COIL	LINE FILTER,70㎜H SQE	
		L901	150-679D	COIL	CHOKE 100UH(NAMYANG)	21
		L901	150-679E	COIL	CHOKE 10UH(NAMYANG)	20
		PA01	106-047B	PRE-AMP	SBX1620-72(SONY)	
		P901	381-094D	SOCKET	CPT PCS-627(HIGH FOCUS)	
		Q02	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q03	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q04	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q110	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q18	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q19	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q201	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q21	0TR114009AA	TRANSISTOR	DTA114ES,TP,ROHM	
		Q211	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q212	0TR126609AA	TRANSISTOR	KTA1266-TP-Y (KTA1015) KEC	
		Q214	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q215	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q22	0TR114009AA	TRANSISTOR	DTA114ES,TP,ROHM	
		Q23	0TR114009AA	TRANSISTOR	DTA114ES,TP,ROHM	
		Q301	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q302	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q401	0TR155500AA	TRANSISTOR	KTD 1555	
		Q402	0TR320509AB	TRANSISTOR	KTC3205-Y (KTC2236A) TP KEC	
		Q403	0TR102609AB	TRANSISTOR	KTC1026-GR TP(KTC2230A),KEC	
		Q501	0TR102009AB	TRANSISTOR	KRC102M,TP(KRC1202),KEC	
		Q601	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		Q801	0TR900000AA	TRANSISTOR	BUZ-90(SIEMENS) SIP MOS	
		Q901	0TR206800BA	TRANSISTOR	KTC2068,KEC	
		Q902	0TR206800BA	TRANSISTOR	KTC2068,KEC	
		Q903	0TR206800BA	TRANSISTOR	KTC2068,KEC	
		Q99	0TR320209AA	TRANSISTOR	KTC3202-TP-Y (KTC1959)KEC	
		RL801	141-018C	RELAY	DG48D1-0(M)	
		R01	0RD0102F609	RESISTOR,FIXED CARBON FILM	10 1/6W 5 TA52	
		R02	0RD1002F609	R,CARBON FILM	10K 1/6W 5	
		R04	0RD1002F609	R,CARBON FILM	10K 1/6W 5	
		R05	0RD1801F609	R,CARBON FILM	1.8K 1/6W 5	
		R06	0RD1801F609	R,CARBON FILM	1.8K 1/6W 5	
		R08	0RD4700F609	R,CARBON FILM	470 1/6W 5	
		R09	0RD4701F609	R,CARBON FILM	4.7K 1/6W 5	
		R10	0RD2702F609	R,CARBON FILM	27K 1/6W 5	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		R100	ORD0201H609	R,CARBON FILM	2.0 1/2W 5	
		R101	ORD4700H609	R,CARBON FILM	470 1/2W 5	
		R11	ORD2702F609	R,CARBON FILM	27K 1/6W 5	
		R12	ORD2201F609	R,CARBON FILM	2.2K 1/6W 5	
		R121	ORD2403F609	R,CARBON FILM	240K 1/6W 5	
		R122	ORD2703F609	R,CARBON FILM	270K 1/6W 5	
		R123	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R124	ORD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R131	ORD6800F609	R,CARBON FILM	680 1/6W 5	
		R132	ORD8201F609	R,CARBON FILM	8.2K 1/6W 5	
		R133	ORD8200F609	R,CARBON FILM	820 1/6W 5	
		R14	ORD3300F609	R,CARBON FILM	330 1/6W 5	
		R15	ORD6801F609	R,CARBON FILM	6.8K 1/6W 5	
		R16	ORD1102F609	R,CARBON FILM	11K 1/6W 5	
		R17	ORD2201F609	R,CARBON FILM	2.2K 1/6W 5	
		R18	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R181	ORD2702F609	R,CARBON FILM	27K 1/6W 5	
		R182	ORD3302F609	R,CARBON FILM	33K 1/6W 5	
		R183	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R184	ORD3302F609	R,CARBON FILM	33K 1/6W 5	
		R185	ORD6801F609	R,CARBON FILM	6.8K 1/6W 5	
		R189	ORD2702F609	R,CARBON FILM	27K 1/6W 5	
		R19	ORD6802F609	R,CARBON FILM	68K 1/6W 5	
		R20	ORD4701F609	R,CARBON FILM	4.7K 1/6W 5	
		R201	ORD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R202	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R203	ORD5600F609	R,CARBON FILM	560 1/6W 5	
		R204	ORD0222F609	R,CARBON FILM	22 1/6W 5	
		R206	ORD1501F609	R,CARBON FILM	1.5K 1/6W 5	
		R207	ORD8201F609	R,CARBON FILM	8.2K 1/6W 5	
		R208	ORD8201F609	R,CARBON FILM	8.2K 1/6W 5	
		R21	ORD3001F609	R,CARBON FILM	3.0K 1/6W 5	
		R211	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R22	ORD4701F609	R,CARBON FILM	4.7K 1/6W 5	20
		R22	ORD5601F609	R,CARBON FILM	5.6K 1/6W 5	21
		R23	ORD5601F609	R,CARBON FILM	5.6K 1/6W 5	
		R233	ORD1501F609	R,CARBON FILM	1.5K 1/6W 5	
		R234	ORD7500F609	R,CARBON FILM	750 1/6W 5	
		R24	ORD2701F609	R,CARBON FILM	2.7K 1/6W 5	
		R244	ORD4703F609	R,CARBON FILM	470K 1/6W 5	
		R247	ORD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R25	ORD8200F609	R,CARBON FILM	820 1/6W 5	
		R250	ORD0752F609	R,CARBON FILM	75 1/6W 5	
		R251	ORD3601F609	R,CARBON FILM	3.6K 1/6W 5	
		R252	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R253	ORD0752F609	R,CARBON FILM	75 1/6W 5	
		R254	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R255	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R256	ORD0752F609	R,CARBON FILM	75 1/6W 5	
		R257	ORD1000F609	R,CARBON FILM	100 1/6W 5	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		R259	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R26	ORD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R260	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R261	ORD6201F609	R,CARBON FILM	6.2K 1/6W 5	
		R262	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R263	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R264	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R271	ORD2202F609	R,CARBON FILM	22K 1/6W 5	
		R275	ORD2401F609	R,CARBON FILM	2.4K 1/6W 5	
		R279	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R28	ORD4700F609	R,CARBON FILM	470 1/6W 5	
		R281	ORD0222F609	R,CARBON FILM	22 1/6W 5	
		R30	ORD3900F609	R,CARBON FILM	390 1/6W 5	
		R301	ORD1004F609	R,CARBON FILM	1.0M 1/6W 5	
		R311	ORD6202F609	R,CARBON FILM	62K 1/6W 5	
		R312	ORD0561H609	R,CARBON FILM	5.6 1/2W 5	
		R313	ORD3601F609	R,CARBON FILM	3.6K 1/6W 5	
		R314	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R315	ORD1001H609	R,CARBON FILM	1.0K 1/2W 5	
		R316	ORD3900H609	R,CARBON FILM	390 1/2W 5	
		R317	ORD2202F609	R,CARBON FILM	22K 1/6W 5	20
		R317	ORD2702F609	R,CARBON FILM	27K 1/6W 5	21
		R318	ORD2402F609	R,CARBON FILM	24K 1/6W 5	
		R32	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R321	ORD1202F609	R,CARBON FILM	12K 1/6W 5	
		R322	ORD0221H609	R,CARBON FILM	2.2 1/2W 5	
		R323	ORD2001F609	R,CARBON FILM	2.0K 1/6W 5	
		R324	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R325	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R326	ORD1201H609	R,CARBON FILM	1.2K 1/2W 5	
		R33	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R34	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R35	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R36	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R37	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R38	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R39	ORD4702F609	R,CARBON FILM	47K 1/6W 5	
		R401	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R402	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R403	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R404	ORD2702F609	R,CARBON FILM	27K 1/6W 5	
		R405	ORD8203F609	R,CARBON FILM	820K 1/6W 5	
		R406	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R407	ORD1501F609	R,CARBON FILM	1.5K 1/6W 5	
		R408	ORD1502F609	R,CARBON FILM	15K 1/6W 5	
		R409	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R41	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R42	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R422	ORD0472F609	R,CARBON FILM	47 1/6W 5	
		R423	ORD3301H609	R,CARBON FILM	3.3K 1/2W 5	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		R424	ORS1201K607	RESISTOR,FIX METAL FILM OXIDE	1.20K 2W 5% TA62	
		R428	180-830B	RESISTOR	RSR 5W 3.3K OHM 5% PD	
		R43	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R431	ORD2701H609	R,CARBON FILM	2.7K 1/2W 5	
		R432	ORS0221K607	RESISTOR,FIX METAL FILM OXIDE	2.20 2W 5% TA62	
		R433	ORS0221K607	RESISTOR,FIX METAL FILM OXIDE	2.20 2W 5% TA62	
		R434	ORD1201H609	R,CARBON FILM	1.2K 1/2W 5	
		R435	ORD0392H609	R,CARBON FILM	39 1/2W 5	
		R437	ORD5602H609	RESISTOR,FIXED CARBON FILM	56K 1/2W 5 M15	
		R438	ORD6802H609	RESISTOR,FIXED CARBON FILM	68K 1/2W 5 TA52	
		R439	ORD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R44	ORD6800F609	R,CARBON FILM	680 1/6W 5	
		R440	ORD2403H609	RESISTOR,FIXED CARBON FILM	240K 1/2W 5 M15	
		R441	ORD1000H609	R,CARBON FILM	100 1/2W 5	
		R45	ORD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R46	ORD7500F609	R,CARBON FILM	750 1/6W 5	
		R47	ORD7500F609	R,CARBON FILM	750 1/6W 5	
		R48	ORD7500F609	R,CARBON FILM	750 1/6W 5	
		R503	ORD2701F609	R,CARBON FILM	2.7K 1/6W 5	
		R504	ORD4700F609	R,CARBON FILM	470 1/6W 5	
		R505	ORD4700F609	R,CARBON FILM	470 1/6W 5	
		R506	ORD4700F609	R,CARBON FILM	470 1/6W 5	
		R507	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R508	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R509	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R51	ORD1003F609	R,CARBON FILM	100K 1/6W 5	
		R511	ORD1003F609	R,CARBON FILM	100K 1/6W 5	
		R512	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R519	ORD4702F609	R,CARBON FILM	47K 1/6W 5	
		R52	ORD1202F609	R,CARBON FILM	12K 1/6W 5	
		R53	ORD5602F609	R,CARBON FILM	56K 1/6W 5	
		R530	ORD4701F609	R,CARBON FILM	4.7K 1/6W 5	
		R531	ORD6801F609	R,CARBON FILM	6.8K 1/6W 5	
		R532	ORD6801F609	R,CARBON FILM	6.8K 1/6W 5	
		R54	ORD3902F609	R,CARBON FILM	39K 1/6W 5	
		R55	ORD7502F609	R,CARBON FILM	75K 1/6W 5	
		R56	ORD2002F609	R,CARBON FILM	20K 1/6W 5	
		R57	ORD4701F609	R,CARBON FILM	4.7K 1/6W 5	
		R58	ORD4701F609	R,CARBON FILM	4.7K 1/6W 5	
		R59	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R60	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R601	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R602	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R603	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R605	ORD1003F609	R,CARBON FILM	100K 1/6W 5	
		R606	ORD8201F609	R,CARBON FILM	8.2K 1/6W 5	
		R607	ORD1003F609	R,CARBON FILM	100K 1/6W 5	
		R608	ORD6802F609	R,CARBON FILM	68K 1/6W 5	
		R609	ORD1003F609	R,CARBON FILM	100K 1/6W 5	
		R611	ORD0101H609	RESISTOR,FIXED CARBON FILM	1.0 1/2W 5 TA52	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		R612	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R613	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R62	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R63	ORD5601F609	R,CARBON FILM	5.6K 1/6W 5	
		R64	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R65	ORD1002F609	R,CARBON FILM	10K 1/6W 5	
		R66	ORD2201F609	R,CARBON FILM	2.2K 1/6W 5	
		R67	ORD2700F609	R,CARBON FILM	270 1/6W 5	
		R68	ORD1201F609	R,CARBON FILM	1.2K 1/6W 5	
		R70	ORD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R801	180-142F	R,CEMENT RWR	5W 2.2J	
		R802	ORD6803H609	R,CARBON FILM	680K 1/2W 5	
		R804	ORS4702K607	RESISTOR,FIX METAL FILM OXIDE	47K 2W 5% TA62	
		R805	ORD2003H609	R,CARBON FILM	200K 1/2W 5	
		R806	ORD1203H609	R,CARBON FILM	120K 1/2W 5	
		R807	ORD5101F609	R,CARBON FILM	5.1K 1/6W 5	
		R808	ORD0472F609	R,CARBON FILM	47 1/6W 5	
		R809	ORD0101F609	R,CARBON FILM	1.0 1/6W 5	
		R810	ORS4702K607	RESISTOR,FIX METAL FILM OXIDE	47K 2W 5% TA62	
		R811	ORS2702L667	RESISTOR,FIX METAL FILM OXIDE	27K 3W 5 SF30	
		R812	ORD0472H609	R,CARBON FILM	47 1/2W 5	
		R813	ORD5101F609	R,CARBON FILM	5.1K 1/6W 5	
		R814	ORD2200F609	R,CARBON FILM	220 1/6W 5	
		R817	ORD1202F609	R,CARBON FILM	12K 1/6W 5	
		R818	ORS0102J607	R,METAL FILM OXIDE	10 1W 5%	
		R819	ORD1303H609	R,CARBON FILM	130K 1/2W 5	
		R820	ORD2003H609	R,CARBON FILM	200K 1/2W 5	
		R821	ORD1503H609	R,CARBON FILM	150K 1/2W 5	
		R84	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R85	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R851	180-783F	RESISTOR,RC	4700K 2W K	
		R86	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R87	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R88	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R89	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R901	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R902	ORD1000F609	R,CARBON FILM	100 1/6W 5	
		R903	ORD2701H609	R,CARBON FILM	2.7K 1/2W 5	
		R904	ORS1002K607	R,METAL FILM OXIDE	10K 2W 5%	
		R905	ORS1002K607	R,METAL FILM OXIDE	10K 2W 5%	
		R906	ORS1002K607	R,METAL FILM OXIDE	10K 2W 5%	
		R907	ORD2701H609	R,CARBON FILM	2.7K 1/2W 5	
		R909	ORD2701H609	R,CARBON FILM	2.7K 1/2W 5	
		R910	ORD1801F609	R,CARBON FILM	1.8K 1/6W 5	
		R911	ORD1801F609	R,CARBON FILM	1.8K 1/6W 5	
		R912	ORD1801F609	R,CARBON FILM	1.8K 1/6W 5	
		R913	ORD3300F609	R,CARBON FILM	330 1/6W 5	
		R914	ORD3900F609	R,CARBON FILM	390 1/6W 5	
		R915	ORD3300F609	R,CARBON FILM	330 1/6W 5	
		R916	ORD1800F609	R,CARBON FILM	180 1/6W 5	

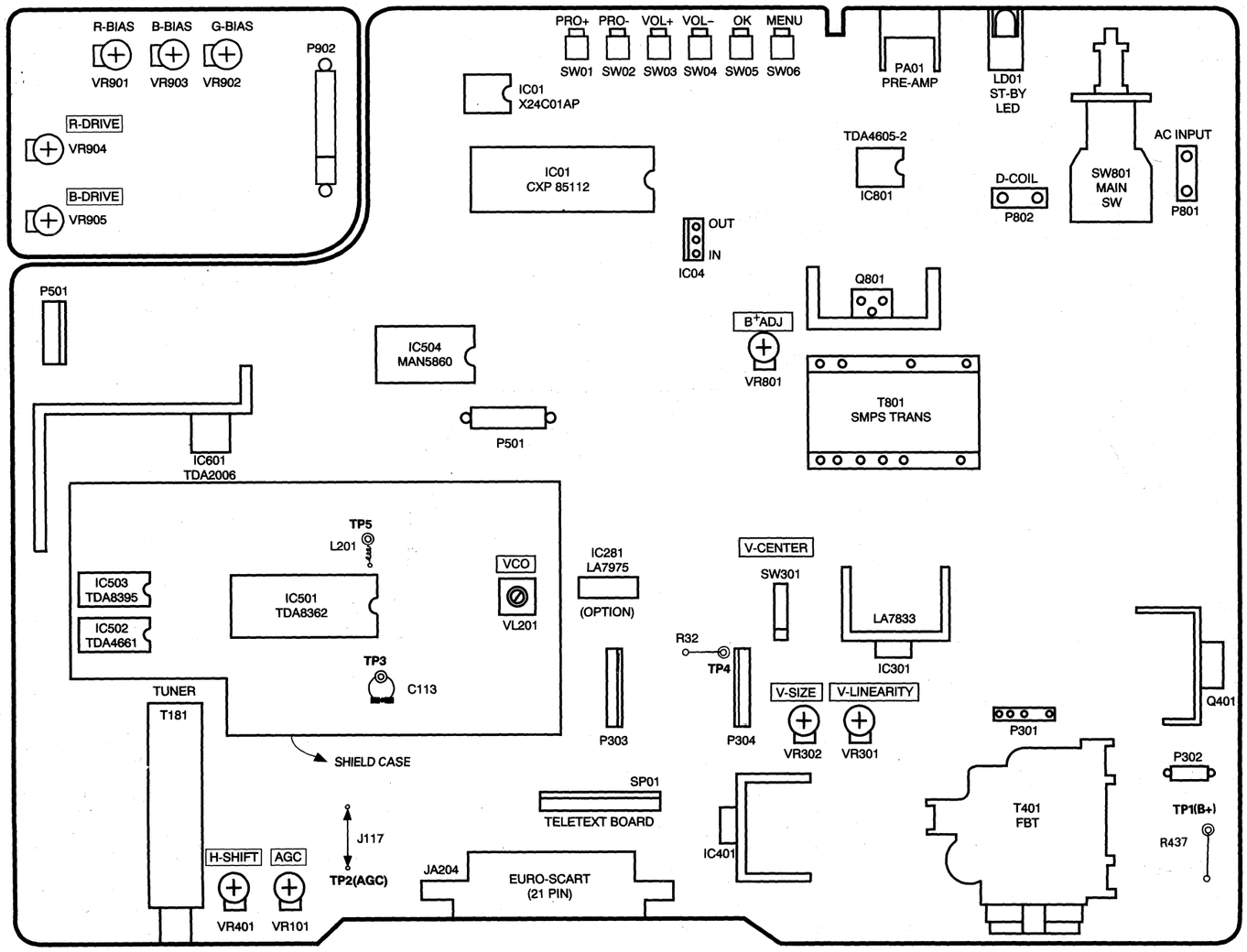
S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		R917	0RD1000F609	R,CARBON FILM	100 1/6W 5	
		R921	0RD1000F609	R,CARBON FILM	100 1/6W 5	
		R922	0RD1000F609	R,CARBON FILM	100 1/6W 5	
		R923	0RD1000F609	R,CARBON FILM	100 1/6W 5	
		R924	0RD1000F609	R,CARBON FILM	100 1/6W 5	
		R93	0RD2701F609	R,CARBON FILM	2.7K 1/6W 5	
		R94	0RD2201F609	R,CARBON FILM	2.2K 1/6W 5	
		R95	0RD1801F609	R,CARBON FILM	1.8K 1/6W 5	
		R96	0RD1001F609	R,CARBON FILM	1.0K 1/6W 5	
		R97	0RD2202F609	R,CARBON FILM	22K 1/6W 5	
		R98	0RD2201F609	R,CARBON FILM	2.2K 1/6W 5	
		R99	0RD7501F609	R,CARBON FILM	7.5K 1/6W 5	
		SG901	165-004A	SPARK GAP	AG20PT 152F-L3N/S-23	
		SP01	366-934N	PIN	MOLEX,WAFER(53291-14)	
		SW01	140-315B	SWITCH	TACT 4LEAD(TA),SKHVLJ,ALPS	
		SW02	140-315B	SWITCH	TACT 4LEAD(TA),SKHVLJ,ALPS	
		SW03	140-315B	SWITCH	TACT 4LEAD(TA),SKHVLJ,ALPS	
		SW04	140-315B	SWITCH	TACT 4LEAD(TA),SKHVLJ,ALPS	
		SW05	140-315B	SWITCH	TACT 4LEAD(TA),SKHVLJ,ALPS	
		SW06	140-315B	SWITCH	TACT 4LEAD(TA),SKHVLJ,ALPS	
		SW301	140-111A	SWITCH	SVC P12T21	
		SW801	140-278C	SWITCH	MAIN,ME5C(TV-5)	
		TC01	0CH5150K406	CAPA,CHIP CERAMIC M/L T.C R/S	15P 50V J SL 2.0X1.25 R/TP	
		TC02	0CH5102K406	CAPA,CHIP CERAMIC M/L T.C R/S	1000P 50V J SL 2.0X1.25 R/TP	
		TC03	0CH5471K406	CAPA,CHIP CERAMIC M/L T.C R/S	470P 50V J SL 2.0X1.25 R/TP	
		TC04	0CH2223K516	CAPA,CHIP CERAMIC M/L H.D R/S	22000P 50V K B 2.0X1.25 R/TP	
		TC06	0CH5101K406	CAPA,CHIP CERAMIC M/L T.C R/S	100P 50V J SL 2.0X1.25 R/TP	
		TC07	0CH5150K406	CAPA,CHIP CERAMIC M/L T.C R/S	15P 50V J SL 2.0X1.25 R/TP	
		TC08	0CX2700K409	C,TUBULA(T.C)	27PF 50V J	
		TC11	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	
		TC12	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		TC13	0CE2256K618	C,ELECTROLYTIC	2.2MF SMS 50V M	
		TC14	0CH1683K946	CHIP CAPA CERAMIC M/L H.D F/S	0.068M 50V Z F 2.0X1.2 R/TP	
		TC15	0CH5221K406	CAPA,CHIP CERAMIC M/L T.C R/S	220P 50V J SL 2.0X1.25 R/TP	
		TC16	0CH2473K516	CAPA,CHIP CERAMIC M/L H.D R/S	47000P 50V K B 2.0X1.25 R/TP	
		TC17	0CH5180K406	CAPA,CHIP CERAMIC M/L T.C R/S	18P 50V J SL 2.0X1.25 R/TP	
		TC18	0CH2224F946	CAPA,CHIP CERAMIC M/L H.D R/S	0.2200UF 16V Z Y5V(F) 2012 R/T	
		TC19	0CH2473K516	CAPA,CHIP CERAMIC M/L H.D R/S	47000P 50V K B 2.0X1.25 R/TP	
		TC22	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	
		TC23	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	
		TC24	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	
		TC26	0CE1076K618	C,ELECTROLYTIC	100MF SMS 50V M	
		TC27	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	
		TC28	0CH1182K516	CHIP CAPA CERAMIC M/L H.D F/S	1800P 50V K B 2.0X1.2 R/TP	
		TC30	0CH5150K406	CAPA,CHIP CERAMIC M/L T.C R/S	15P 50V J SL 2.0X1.25 R/TP	
		TC31	0CH5101K406	CAPA,CHIP CERAMIC M/L T.C R/S	100P 50V J SL 2.0X1.25 R/TP	
		TC32	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	
		TC33	0CE1066F618	C,ELECTROLYTIC	10MF SMS 16V M	
		TC34	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		TC35	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		TC36	0CE1076K618	C,ELECTROLYTIC	100MF SMS 50V M	
		TC37	0CH1103K516	CHIP CAPA CERAMIC M/L H.D F/S	0.01M 50V K B 2.0X1.25 R/TP	
		TC38	0CH5300K406	CAPA,CHIP CERAMIC M/L T.C R/S	30P 50V SL 2.0X1.25 R/TP	
		TC39	0CN2710K519	C,TUBULA(HIGH DIELE)	270PF 50V K	
		TC41	0CH5300K406	CAPA,CHIP CERAMIC M/L T.C R/S	30P 50V SL 2.0X1.25 R/TP	
		TC43	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		TC45	0CH5101K406	CAPA,CHIP CERAMIC M/L T.C R/S	100P 50V J SL 2.0X1.25 R/TP	
		TC46	0CE1076F618	C,ELECTROLYTIC	100MF SMS 16V M	
		TC61	0CE4756K618	C,ELECTROLYTIC	4.7MF SMS 50V M	
		TD02	0DD414809ED	DIODE	DS4148	
		TD03	0DD414809ED	DIODE	DS4148	
		TD04	0DD414809ED	DIODE	DS4148	
		TD05	0DD414809ED	DIODE	DS4148	
		TD06	0DD414809ED	DIODE	DS4148	
		TD07	0DD414809ED	DIODE	DS4148	
		TD08	0DD414809ED	DIODE	DS4148	
		TH801	163-012C	THERMISTOR	J502P54E180M220	
		TIC01	0ISM523120A	IC, SIEMENS	SDA5231-2,28D,TXT,DATA SLICER	
		TIC02	0ISM524852A	IC,SIEMENS	SDA5248-5C2 40D C/G(E-EUROPE)	
		TIC03	0IGS714256Q	IC, GOLDSTAR ELECTRON	GM71C4256B-70 20D 256*4 DRAM	
		TIC04	0ISM201600B	IC,SIEMENS	SDA20160-A526 40D TXT MICOM	
		TIC05	0ISM252658A	IC,SIEMENS	SDA2526-5 8D EEPROM(2K BIT)	
		TIC06	0IGS382000A	IC, GOLDSTAR ELECTRON	GL3820(A/V SWITCHING)	
		TIC07	0IGS780800A	IC, GOLDSTAR ELECTRON	GL7808 REGULATOR	
		TIC08	0IGS780500A	IC, GOLDSTAR ELECTRON	GL7805 REGULATOR	
		TJ15	0RD0101H609	RESISTOR,FIXED CARBON FILM	1.0 1/2W 5 TA52	
		TL02	0LA0152K119	INDUCTOR AXIAL LEAD	15UH K 2.3*3.4 TP	
		TQ01	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		TQ02	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		TQ03	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		TQ04	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		TQ05	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		TQ06	0TR319809AA	TRANSISTOR	KTC3198-TP-Y (KTC1815)KEC	
		TR01	0RH1201D622	RESISTOR CHIP	1.2K 1/10W 5 D.R/TP	
		TR02	0RH6202D622	RESISTOR CHIP	62K 1/10W 5 TA	
		TR03	0RH3301D622	RESISTOR CHIP	3.3K 1/10W 5 D.R/TP	
		TR04	0RH3300D622	RESISTOR CHIP	330 1/10W 5 D.R/TP	
		TR05	0RH0122D622	RESISTOR CHIP	12 1/10W 5 D.R/TP	
		TR08	0RH4701D622	RESISTOR CHIP	4.7K 1/10W 5 D.R/TP	
		TR09	0RD1002F609	R,CARBON FILM	10K 1/6W 5	
		TR11	0RH1000D622	RESISTOR CHIP	100 1/10W 5 D.R/TP	
		TR12	0RH1501D622	RESISTOR CHIP	1.5K 1/10W 5 D.R/TP	
		TR13	0RH1501D622	RESISTOR CHIP	1.5K 1/10W 5 D.R/TP	
		TR14	0RH1501D622	RESISTOR CHIP	1.5K 1/10W 5 D.R/TP	
		TR16	0RH1801D622	RESISTOR CHIP	1.8K 1/10W 5 D.R/TP	
		TR17	0RH0101D622	RESISTOR CHIP	1.0 1/10W 5 TA	
		TR18	0RH1000D622	RESISTOR CHIP	100 1/10W 5 D.R/TP	
		TR19	0RH0101D622	RESISTOR CHIP	1.0 1/10W 5 TA	
		TR21	0RH1000D622	RESISTOR CHIP	100 1/10W 5 D.R/TP	
		TR22	0RH0000D622	RESISTOR CHIP	0 1/10W 5 D.R/TP	

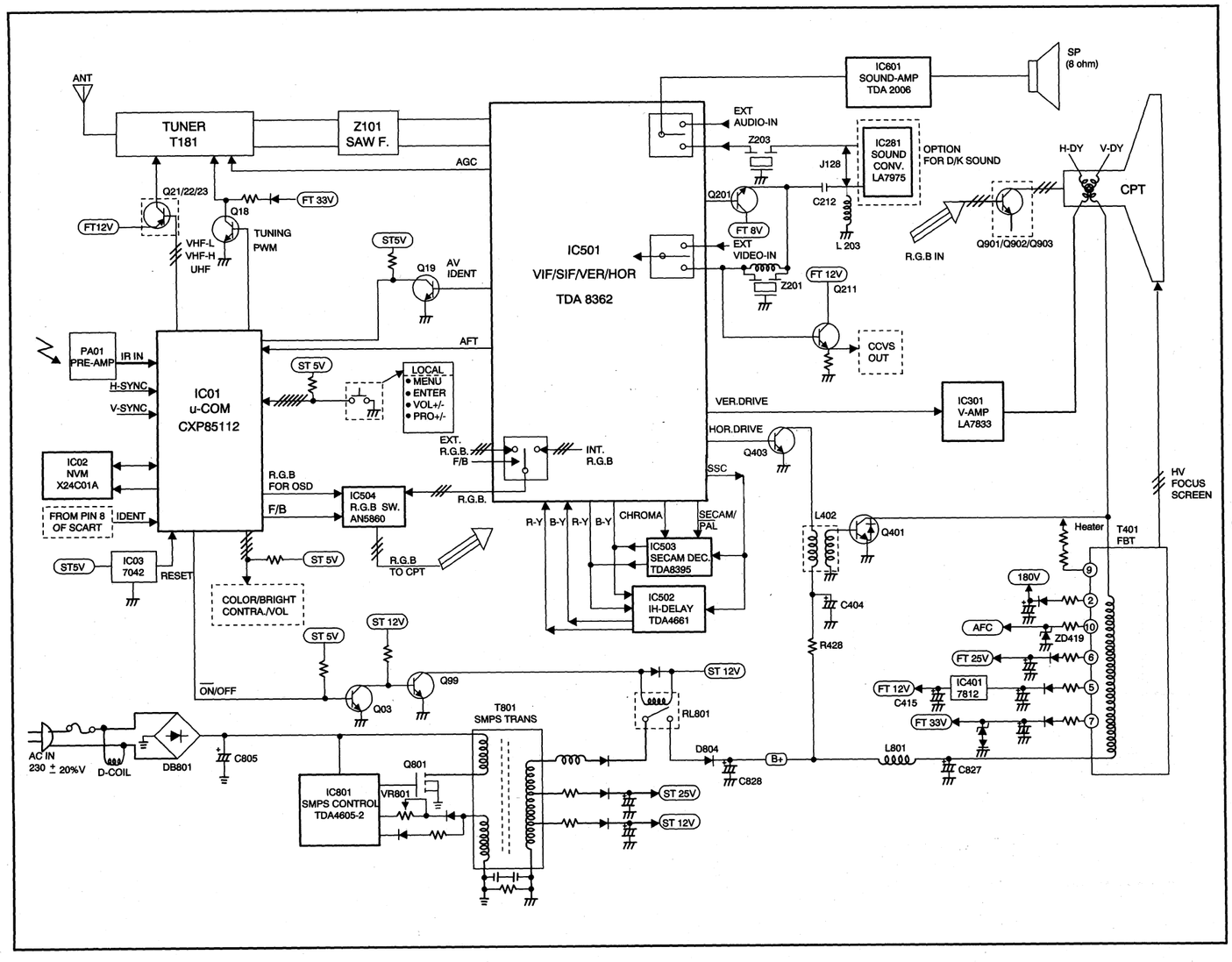
S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		TR23	ORH0000D622	RESISTOR CHIP	0 1/10W 5 D.R/TP	
		TR26	ORD1000F609	R.CARBON FILM	100 1/6W 5	
		TR27	ORD1000F609	R.CARBON FILM	100 1/6W 5	
		TR28	ORD1002F609	R.CARBON FILM	10K 1/6W 5	
		TR29	ORH0101D622	RESISTOR CHIP	1.0 1/10W 5 TA	
		TR30	ORD5601F609	R.CARBON FILM	5.6K 1/6W 5	
		TR31	ORH4701D622	RESISTOR CHIP	4.7K 1/10W 5 D.R/TP	
		TR32	ORH4701D622	RESISTOR CHIP	4.7K 1/10W 5 D.R/TP	
		TR33	ORD1002F609	R.CARBON FILM	10K 1/6W 5	
		TR34	ORH1002D622	RESISTOR CHIP	10K 1/10W 5 D.R/TP	
		TR35	ORH1501D622	RESISTOR CHIP	1.5K 1/10W 5 D.R/TP	
		TR36	ORH1501D622	RESISTOR CHIP	1.5K 1/10W 5 D.R/TP	
		TR37	ORH1501D622	RESISTOR CHIP	1.5K 1/10W 5 D.R/TP	
		TR38	ORH6800D622	RESISTOR CHIP	680 1/10W 5 D.R/TP	
		TR39	ORD4701F609	R.CARBON FILM	4.7K 1/6W 5	
		TR41	ORH6800D622	RESISTOR CHIP	680 1/10W 5 D.R/TP	
		TR42	ORH6800D622	RESISTOR CHIP	680 1/10W 5 D.R/TP	
		TR43	ORH1500D622	RESISTOR CHIP	150 1/10W 5 D.R/TP	
		TR44	ORH1500D622	RESISTOR CHIP	150 1/10W 5 D.R/TP	
		TR45	ORH1500D622	RESISTOR CHIP	150 1/10W 5 D.R/TP	
		TR49	ORH4701D622	RESISTOR CHIP	4.7K 1/10W 5 D.R/TP	
		TR50	ORH4701D622	RESISTOR CHIP	4.7K 1/10W 5 D.R/TP	
		TR55	ORH0000D622	RESISTOR CHIP	0 1/10W 5 D.R/TP	
		TR56	ORH8201D622	RESISTOR CHIP	8.2K 1/10W 5 D.R/TP	
		TR57	ORH1000D622	RESISTOR CHIP	100 1/10W 5 D.R/TP	
		TR58	ORH0000D622	RESISTOR CHIP	0 1/10W 5 D.R/TP	
		TR72	ORH0000D622	RESISTOR CHIP	0 1/10W 5 D.R/TP	
		TR73	ORH0000D622	RESISTOR CHIP	0 1/10W 5 D.R/TP	
		TX01	156-007D	OSCILLATOR	OSC.X-TAL 13.875MHZ	
		TX02	156-007C	OSCILLATOR	OSC.X-TAL 6.0MHZ	
		TX03	156-025F	OSCILLATOR	12.000MHZ(S/C:16P)	
		T181	113-238D	TUNER	TUKE1C07BP(38.0MHZ)	
		T401	154-106C	FBT	FCR1-19SP3	20
		T401	154-194D	FBT	FCJ*194D-21SP4	21
		T402	151-386A	TRANSFORMER	H.DRIVE 19Y4BY	
		T801	151-453A	TRANSFORMER	SMPS FOR TDA4605-2(PC31A-NARR)	
		VL201	150-327M	COIL	VIF (PC04X)	
		VR101	180-452H	RESISTOR	RH0638C14R B103 HORIZONTAL(TA)	
		VR301	180-452E	RESISTOR	RH0638CJ3R B222 HORIZONTAL(TA)	
		VR302	180-452A	RESISTOR	RH0638CJ2R B221 HORIZONTAL(TA)	
		VR401	180-452H	RESISTOR	RH0638C14R B103 HORIZONTAL(TA)	
		VR801	180-451E	R.VARIABLE	EVN-DJAA03 B202 HORIZONTAL<TA>	
		VR901	180-451G	R.VARIABLE	EVN-DJAA03 B502 HORIZONTAL<TA>	
		VR902	180-451G	R.VARIABLE	EVN-DJAA03 B502 HORIZONTAL<TA>	
		VR903	180-451G	R.VARIABLE	EVN-DJAA03 B502 HORIZONTAL<TA>	
		VR904	180-451C	R.VARIABLE	EVN-DJAA03 B501 HORIZONTAL<TA>	
		VR905	180-451C	R.VARIABLE	EVN-DJAA03 B501 HORIZONTAL<TA>	
		X01	156-005B	OSCILLATOR	4MHZ	
		X501	156-006A	OSCILLATOR	X-TAL 4.43MHZ (18U)	
		ZD01	0DZ510009AB	DIODE ZENER	MTZ5.1B,TP(52MM),ROHM	

S	AL	LOCA.NO	PART NO(GS)	DESCRIPTION	SPECIFICATION	REMARKS
		ZD04	0DZ560009AA	DIODE ZENER	MTZ5.6B,TP(52MM),ROHM	
		ZD05	0DZ560009AA	DIODE ZENER	MTZ5.6B,TP(52MM),ROHM	
		ZD06	0DZ750009AA	DIODE ZENER	MTZ7.5B,TP(52MM),ROHM	
		ZD07	0DZ750009AA	DIODE ZENER	MTZ7.5B,TP(52MM),ROHM	
		ZD08	0DZ750009AA	DIODE ZENER	MTZ7.5B,TP(52MM),ROHM	
		ZD401	0DZ330009BA	DIODE ZENER	HZT33	
		ZD402	0DZ910009BA	DIODE ZENER	MTZ9.1B,TP(52MM),ROHM	
		ZD403	0DZ910009BA	DIODE ZENER	MTZ9.1B,TP(52MM),ROHM	
		ZD419	0DZ910009BA	DIODE ZENER	MTZ9.1B,TP(52MM),ROHM	
		ZD501	0DZ510009AB	DIODE ZENER	MTZ5.1B,TP(52MM),ROHM	
		Z101	166-018A	FILTER	SAW OFWK1950(SIEMENS)	
		Z201	166-031L	FILTER	TPS 5.5MB-TF21(TA)	
		Z202	166-031N	FILTER	TPS 6.5MB-TF21(TA)	
		Z203	166-002J	FILTER	SFE6.0MB-TF21 (TA)	
		Z281	166-015W	FILTER	RESONATOR,CSB500E55	
				*** END OF DATA ***		

Alignment/Test Point Location Guide



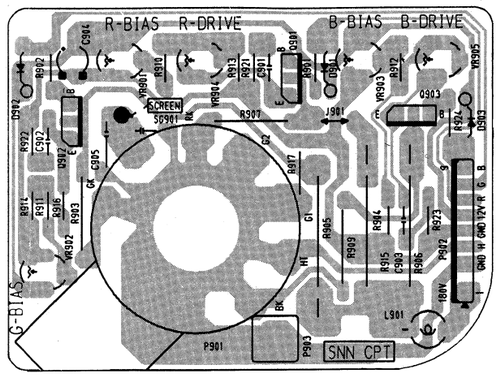
Block Diagram



Component Locaton Guide

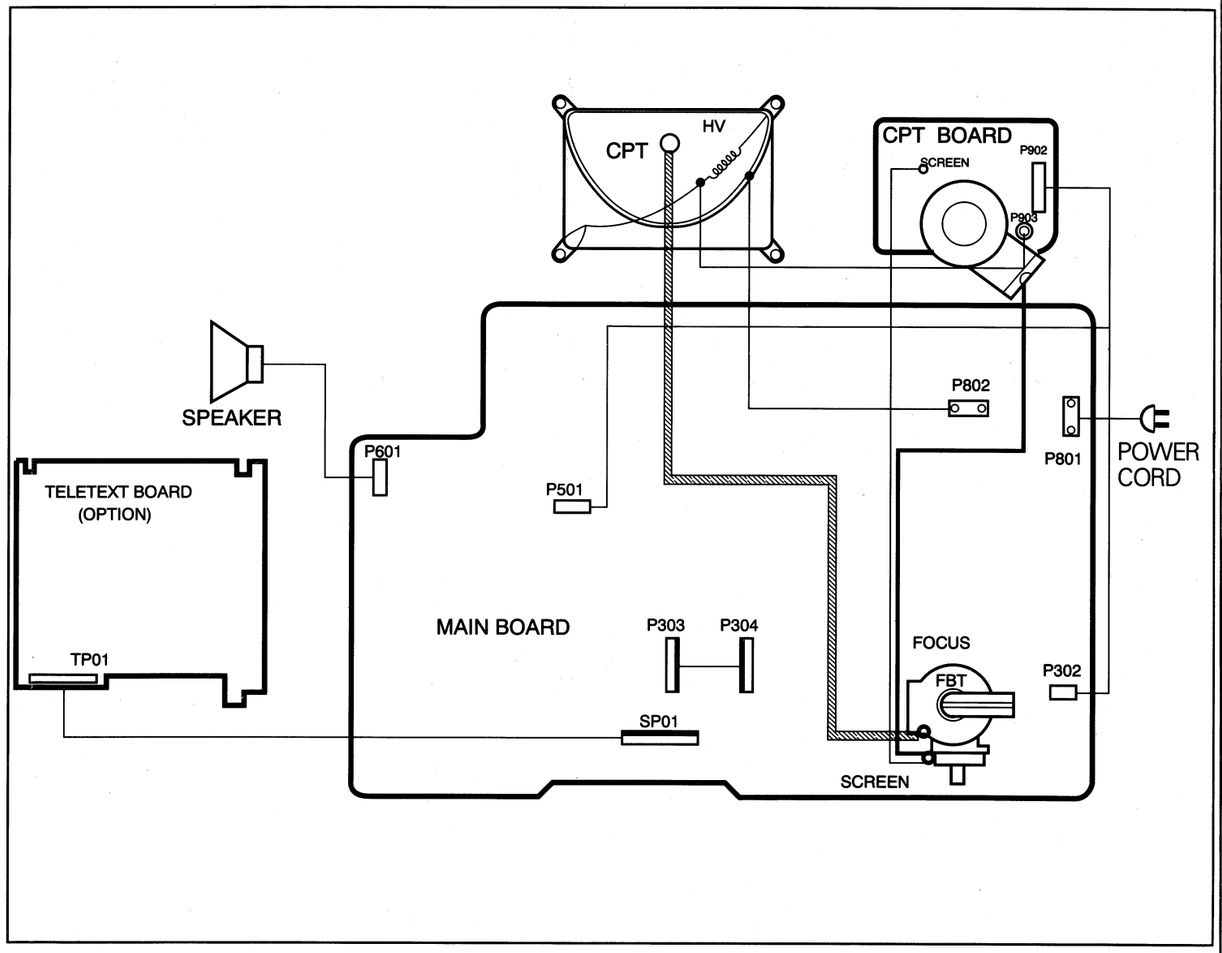
C01	C2	C401	E4	C819	E3	L202	B3	R33	D1	R260	C5	R807	F1
C02	D2	C402	B5	C820	E3	L203	C3	R34	D1	R261	C5	R808	F2
C03	E1	C403	F3	C821	D3	L204	C3	R35	D1	R262	D4	R809	E2
C08	A3	C404	F4	C822	D2	L240	C5	R36	D1	R263	D4	R810	F2
C09	D2	C411	E5	C824	E3	L242	D5	R37	D1	R264	D4	R811	F1
C10	C1	C412	F5	C825	E3	L251	D5	R38	D1	R265	C5	R812	E2
C11	D2	C413	E5	C827	F4	L252	D5	R39	E1	R266	C5	R817	F2
C12	D3	C414	E5	C828	F3	L253	D5	R41	D2	R267	C5	R818	D3
C13	C2	C415	D5	C852	G3	L254	D5	R42	D2	R271	C3	R819	F1
C14	C2	C416	E5	C853	G3	L401	G3	R43	D2	R275	C3	R820	F1
C15	C2	C417	E5	C854	G3	L402	F4	R44	C2	R279	D3	R821	F1
C16	C1	C418	E5	C855	G1	L501	C3	R45	D3	R281	C4	R822	E1
C17	C1	C420	C4	C856	G2	L801	F3	R46	D2	R301	C4	R851	F3
C18	B2	C421	G4	C901	A1	L802	D2	R47	D2	R311	E4	R901	A1
C19	C2	C422	G4	C902	B1	L803	E3	R48	D2	R312	E4	R902	B1
C20	C1	C423	G4	C903	A2	L804	F3	R51	A4	R313	E4	R903	A1
C21	A5	C424	G4	C904	A1	L851	G2	R52	A5	R314	D4	R904	A1
C22	A5	C425	G5	C905	A1	L901	B1	R53	A5	R315	E4	R905	B1
C23	C3	C426	D3	CD1	D1	LD01	F1	R54	A5	R316	F4	R906	B1
C24	D2	C427	G3	D09	A5	P101	D5	R55	C1	R317	E4	R907	A1
C25	D2	C430	F5	D181	B5	P102	B5	R56	B2	R318	E4	R909	A2
C27	F1	C431	B5	D211	D5	P301	F4	R57	C1	R321	E4	R910	A1
C28	E1	C432	B5	D301	E3	P302	G5	R58	C1	R322	E5	R911	B1
C29	D2	C433	B4	D302	E3	P501	C2	R59	C1	R323	E4	R912	B1
C30	C2	C434	B4	D401	E5	P601	A2	R60	C1	R324	E4	R913	A1
C31	C1	C435	B4	D402	E5	P801	G2	R62	E1	R325	E4	R914	B1
C32	A2	C436	B4	D403	E5	P802	F2	R63	E1	R326	E5	R915	A1
C33	C2	C437	B5	D404	A5	P901	B1	R64	D1	R401	B5	R916	B1
C34	D2	C501	A3	D405	G4	P902	B1	R65	D1	R402	B5	R917	B1
C36	B2	C502	B3	D406	D3	P903	B1	R66	E1	R403	B4	R921	A1
C59	C1	C503	B3	D407	D3	PA01	F1	R67	F1	R404	B4	R922	B1
C62	C2	C504	B3	D408	G4	Q02	E1	R68	E1	R407	B5	R923	A1
C81	C2	C505	B3	D409	F4	Q03	E1	R70	C2	R408	B4	R924	A2
C82	D3	C508	A4	D410	D3	Q04	D4	R84	D1	R409	B4	RL801	E3
C111	C5	C511	A4	D411	E3	Q18	A4	R85	D1	R410	B5	SG901	A1
C112	C4	C512	B4	D412	E5	Q19	C1	R86	D1	R422	E4	SP01	C5
C113	C4	C513	B4	D421	G4	Q21	A5	R87	D1	R423	F3	SW01	D1
C114	C4	C514	B4	D422	E3	Q22	A5	R88	D1	R424	G4	SW02	D1
C181	A4	C515	B3	D507	D4	Q23	A5	R89	D1	R428	F4	SW03	D1
C182	A4	C516	A4	D508	D3	Q99	E3	R93	D3	R431	F5	SW04	D1
C183	A5	C517	A4	D601	A2	Q110	C4	R94	D3	R432	E5	SW05	E1
C184	A5	C518	A4	D602	B2	Q201	C3	R95	D3	R433	E5	SW06	E1
C185	A5	C521	A4	D801	E2	Q211	C5	R96	D3	R434	E5	SW301	E4
C186	A5	C522	A3	D802	F2	Q212	C5	R97	D3	R435	G4	SW801	G1
C187	A5	C524	B5	D803	F2	Q214	D5	R98	D3	R436	E5	T181	B4
C188	A5	C525	A3	D804	E3	Q215	C5	R99	D3	R437	G5	T401	F5
C189	A5	C526	A3	D805	D3	Q301	E4	R100	E3	R438	G5	T402	F4
C202	C3	C527	C4	D806	E3	Q302	D4	R101	D2	R439	G5	T801	E3
C203	C3	C528	C4	D807	E3	Q401	G4	R121	C5	R440	G4	TH801	F2
C212	C3	C531	C3	D901	A1	Q402	E4	R122	C5	R441	D4	VL201	C4
C223	C3	C532	C2	D902	B1	Q403	E4	R123	C5	R503	D3	VR101	B5
C224	B3	C533	C2	D903	A1	Q501	D3	R124	C5	R504	B3	VR301	E4
C225	C3	C534	C2	DB801	G3	Q601	A3	R131	B5	R505	B3	VR302	E4
C226	C3	C535	B2	F801	G1	Q801	E2	R132	B5	R506	B3	VR401	B5
C227	B3	C536	B2	F802	G1	Q901	A1	R133	C4	R507	C5	VR801	E2
C228	B3	C538	B2	FR401	F5	Q902	B1	R181	A4	R508	D3	VR901	A1
C231	B3	C539	C2	FR402	E5	Q903	A1	R184	B5	R509	B3	VR902	B1
C232	B3	C550	A3	FR403	F5	R01	C1	R185	B5	R510	B2	VR903	B1
C225	D5	C551	A3	FR404	G5	R02	A3	R186	B5	R511	B4	VR904	A1
C256	D4	C601	C4	FR405	F4	R03	C1	R189	A4	R512	A3	VR905	A2
C258	C5	C602	A3	FR406	G5	R04	E1	R201	C3	R513	B2	X01	C2
C259	D5	C603	B2	FR601	C1	R05	E2	R202	C3	R514	B2	X501	B4
C260	D5	C604	A2	FR802	E3	R06	D1	R203	C3	R519	B4	Z101	B4
C277	D3	C605	B2	FR803	E3	R07	D1	R204	C3	R530	C2	Z201	B3
C281	C3	C606	A3	IC01	D1	R08	D1	R205	C3	R531	B3	Z281	C4
C282	C4	C607	A2	IC02	C1	R09	C2	R206	B3	R532	B2	ZD01	E1
C283	D4	C608	A3	IC281	C4	R10	C2	R207	B3	R601	C4	ZD04	C2
C284	C3	C609	A2	IC301	E4	R11	E2	R208	B2	R602	C3	ZD05	D3
C285	C3	C610	B3	IC401	D5	R12	E1	R211	B3	R603	A3	ZD06	C1
C301	C4	C611	A3	IC501	C4	R14	D2	R233	C3	R605	A2	ZD07	C1
C302	C4	C801	G2	IC502	A4	R15	E2	R234	C3	R606	A2	ZD08	C1
C311	E4	C802	G2	IC503	A3	R16	E1	R243	D5	R607	B2	ZD401	A5
C312	E4	C803	G3	IC504	C2	R17	D2	R244	D5	R608	A2	ZD402	D4
C313	E4	C804	G3	IC601	B3	R18	D1	R247	D5	R609	B2	ZD403	B5
C314	F4	C805	F2	IC801	F1	R19	C2	R250	C5	R611	A2	ZD419	E5
C315	E4	C806	F2	JA204	C5	R20	D2	R251	D5	R612	A3	ZD501	A4
C316	F4	C807	F1	L01	C2	R21	E1	R252	C5	R613	A3		
C317	E4	C808	F2	L02	D1	R22	D2	R253	C5	R801	G3		
C318	E4	C811	E2	L08	C2	R23	D4	R254	C5	R802	F1		
C319	E4	C812	F2	L100	B4	R24	D2	R255	C5	R803	F2		
C321	E4	C814	E2	L101	B4	R25	D2	R256	C5	R804	F2		
C322	E4	C817	E3	L181	B5	R30	D2	R257	D5	R805	F1		
C400	F3	C818	D3	L201	C3	R32	D4	R259	C3	R806	F1		

CPT Board (14")



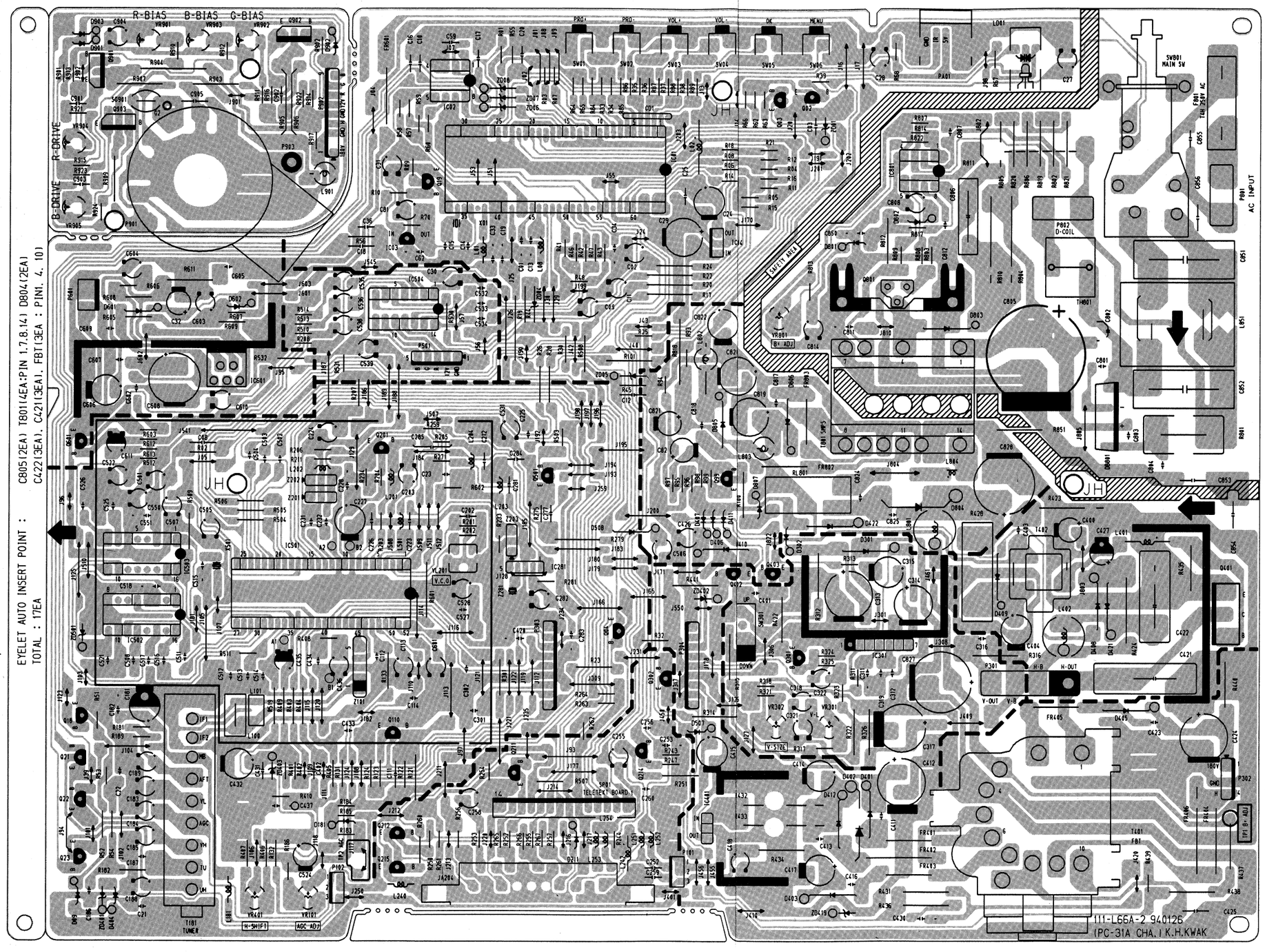
PCB P/N	Adoption	Remarks
111-L77A	14inch, SNN CPT (for CKD MODEL)	• Main parts Location are all the same. • There are two kinds of CPT Board, One for SNN CPT(14"), the other for HIFO CPT (20", 21")
111-M25A	14inch, SNN CPT (for complete set)	
111-M10A	20", 21" inch, HiFo CPT (for CKD MODEL)	
111-L66A	20", 21" inch, HiFo CPT (for comlpete set)	

Wiring Diagram



Printed Circuit Board

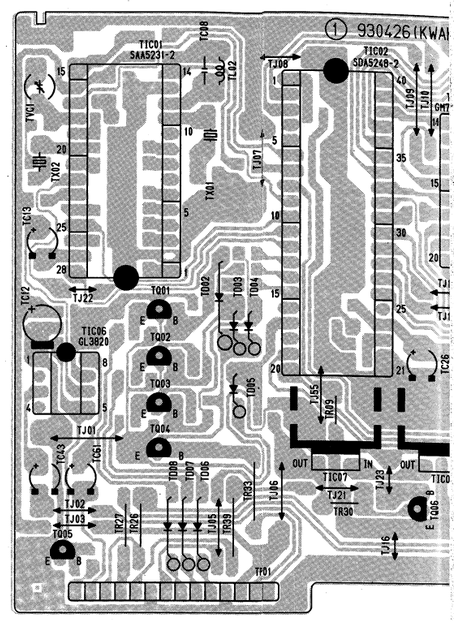
Main P.C.Board (Component Side)



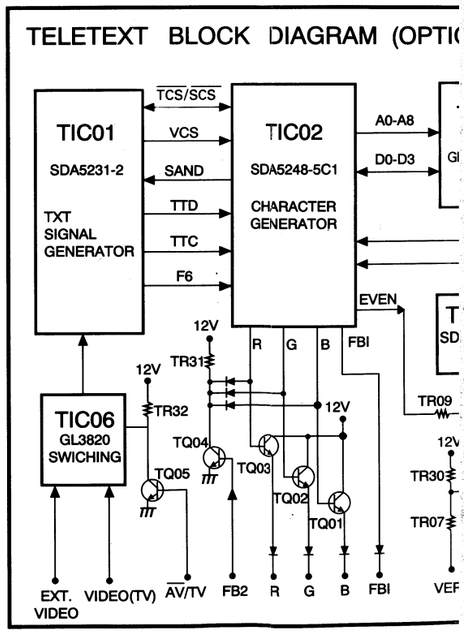
C8051(2EA) T8011(4EA:PIN 1.7.8.14) D804(2EA)
C4221(3EA). C4211(3EA). FBT(3EA : PIN. 4. 10)

EYELET AUTO INSERT POINT : 5EA
TOTAL : 17EA

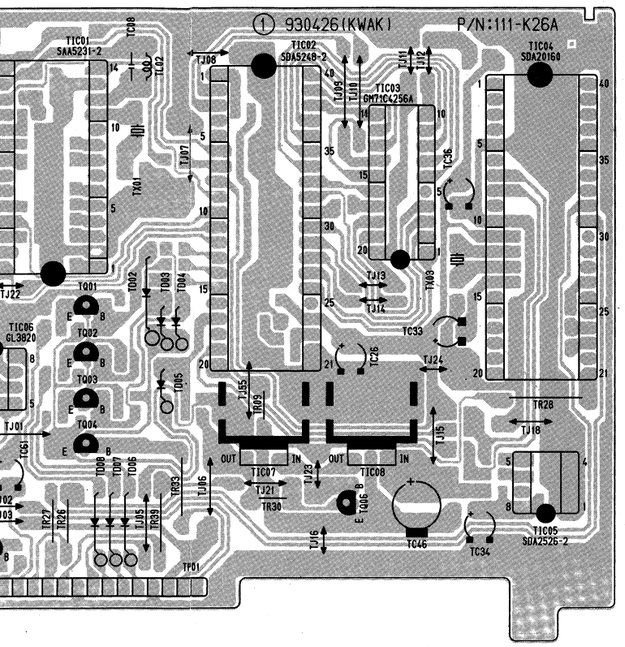
TXT P.C.Board (Component S



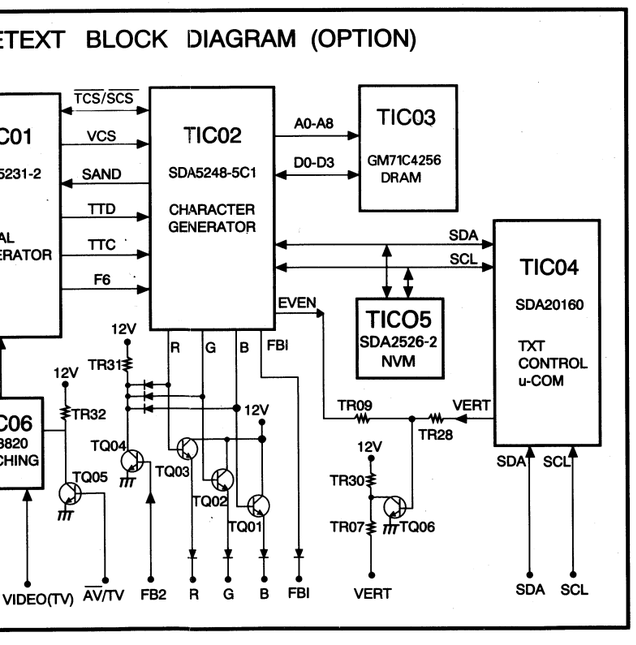
TELETEXT BLOCK DIAGRAM (OPTIC



TXT P.C.Board (Component Side)-OPTION



ETEXT BLOCK DIAGRAM (OPTION)



Alignment procedures

1. It is safe to adjust after using insulating transformer between the power supply line and chassis input to prevent the risk of electric shock and protect the instrument.
2. Never disconnect leads while the TV receiver is on.
3. Don't short any portion of circuits while power is on.
4. The adjustment must be done by the correct appliances. But this is changeable in view of productivity.
5. Unless other-wise noted, set the line voltage to 230V±20%, 50/60hz.

Test Equipment required

1. VIF sweep generator
2. Color bar/cross-hatch pattern generator
3. DC power supply (24V) X 2
4. Digital multi-meter
5. Oscilloscope

● Regulated B+ adjustment

Test Point : TP 1
Adjust : VR 801

1) Tune the TV set to receive a broadcast signal.
2) Set color, bright, contrast to max. position.
3) Connect DC voltmeter to the TP 1 (J421).
4) Adjust VR801 for 112V ± 1.5V as to smaller model than 21 inch,
   118V ± 1.5V as to 21 inch.

NOTE: This adjustment should be performed after warming up for 10 minutes.

● VCO (Voltage Controlled Oscillator)

1. Connect the measuring equipment to the TV as shown Fig. 1

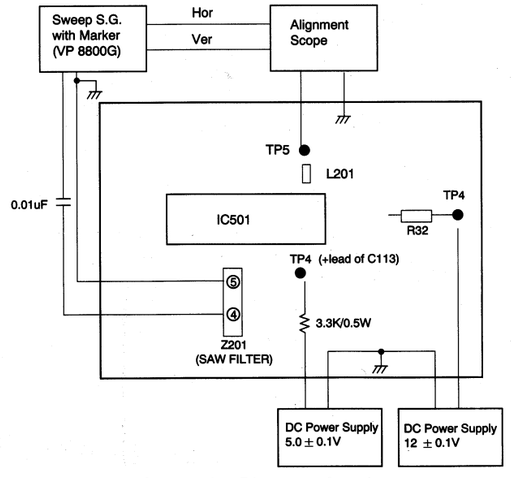


Fig. 1 Connection Diagram of equipment

2. Adjust VL 201 so that the level of Picture Carrier(Pc) maker point may be the lowest position as shown Fig 2.

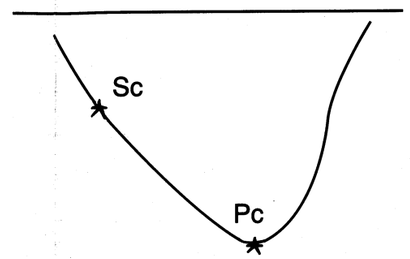


Fig 2

NOTE: 1) In case of the model of PAL/SECAM-B/G, D/K system, Pc frequency is 38Mhz.
In case of PAL-I, 39.5Mhz.

2) When performing this adjustment, if there are 2 adjusted points in VL201, select the lower core position.

● RF AGC adjustment

Test point : TP 2 (J117) or Observing Display
Adjust : VR 101

The RF AGC control (VR 101) was aligned at the time of manufacture for optimum performance over a wide range conditions. Readjust of VR 101 should not be necessary unless unusual local conditions exist, such as;

1) Channel interference in a CATV system.

2) Picture bending and/or color beats, which are unusually due to excessive RF signal input when the receiver is too close to a transmitting tower or when the receiver is connected to an antenna distribution system where the RF signal has been amplified.

   In this case, the input signal should be attenuated (with a pad or filter) to a satisfactory level.

3) Picture noise caused by "broadcast noise" or weak signal.
   If the broadcast is "clean" and the RF signal is at least 1mV (60dBu), the picture will be noise free in any area.

Adjusting the VR 101 (RF AGC) control to one end of rotation will usually cause a relatively poor signal to noise ratio;
Adjusting to the other end of rotation will usually cause a degradation of overload capabilities resulting in color beats or adjacent channel reference.
For best results, adjust the VR 101 control while performing on all other local channels, or the voltage at TP2 will be 5.5±0.1Vdc.

● Horizontal center adjustment

Test Point : Observing Display
Adjust : VR 401

1) Tune the TV set to receive a broadcast signal.
2) Adjust the H-shift control (VR 401) for obtaining geometric center of valuable display horizontally.

● Vertical size, linearity, center adjustment

Test Point : Observe Display
Adjust : VR 302 (Vertical size) VR 301 (Vertical linearity) SW 301 (Vertical center)

1) Tune the TV set to receive digital test pattern.
2) Reset color, bright to 50% and contrast 75%.
3) Adjust the vertical size control (VR 302) for approximately 1/8 inch overscan at top and bottom of display.
4) Adjust the vertical linearity control (VR 301) to obtain which the upper half circle of the pattern is the same vertical length as the lower half circle.
5) Adjust the vertical center control (SW 301) for obtaining geometric center of valuable display vertically.

● Focus adjustment

Test Point : Observe Display
Adjust : Focus control of FBT

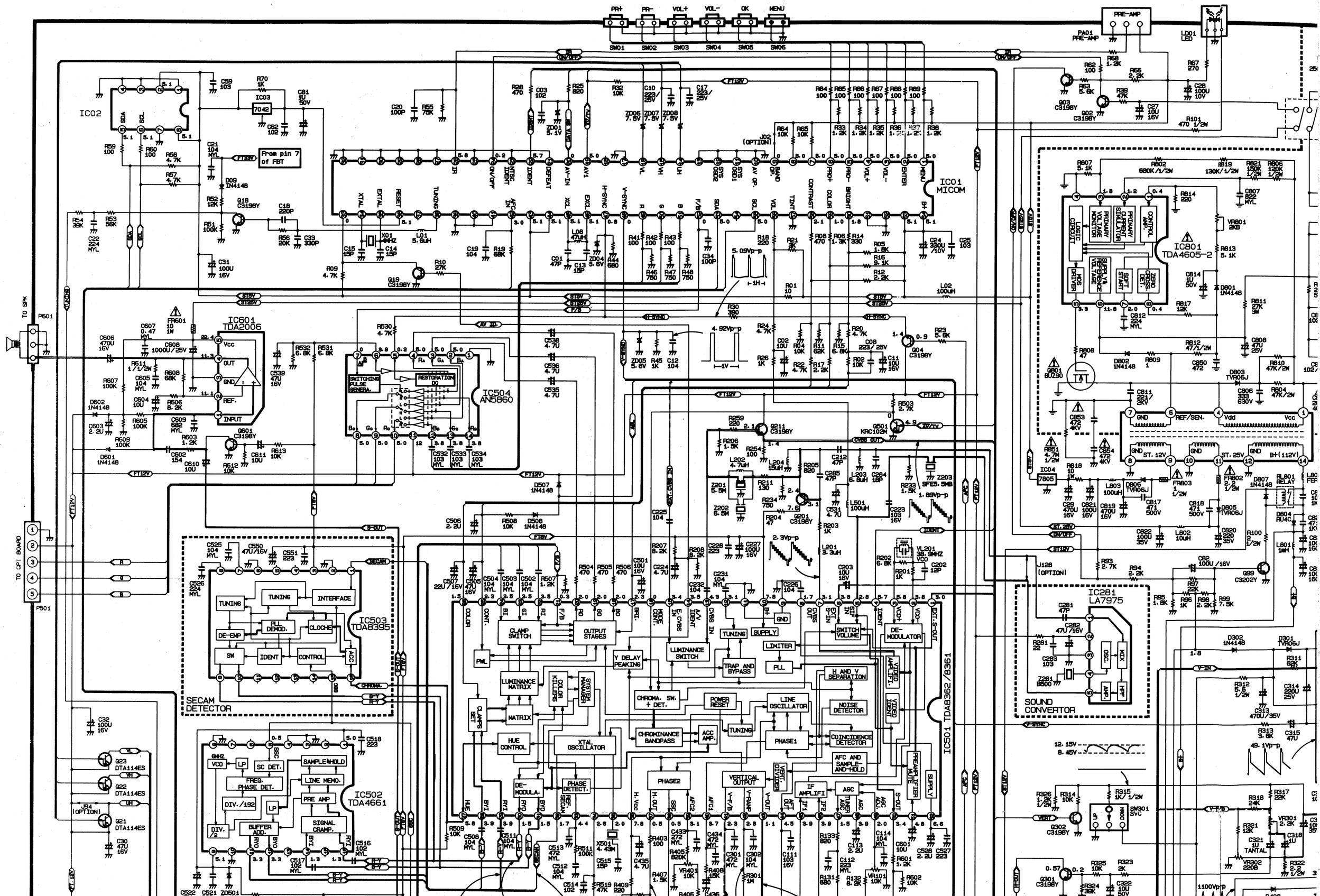
1) Set color to minimum, bright and contrast to maximum.
2) Tune the TV set to an inactive channel station (snow condition).
3) Adjust the focus control for best overall focus.

● Screen & white balance (color temperature) adjustment

NOTE: The color bias controls (VR901, VR902, VR903) affect the low light(dark) area of the picture while the color drive controls (VR904, VR905) affect the high light (white) areas.

1) Tune the TV to a local TV channel and set the color, bright, control to minimum and contrast to maximum.
2) Adjust screen VR of FBT that 100% black area of the gray scale is the same brightness as 80% black area.
3) By using color analyzer (white balance checker), adjust X position equals to 281±8 and Y position equals to 288±8, it means color temperature is 10000° K at low light (6ft · L) at high light (over 45ft · L).

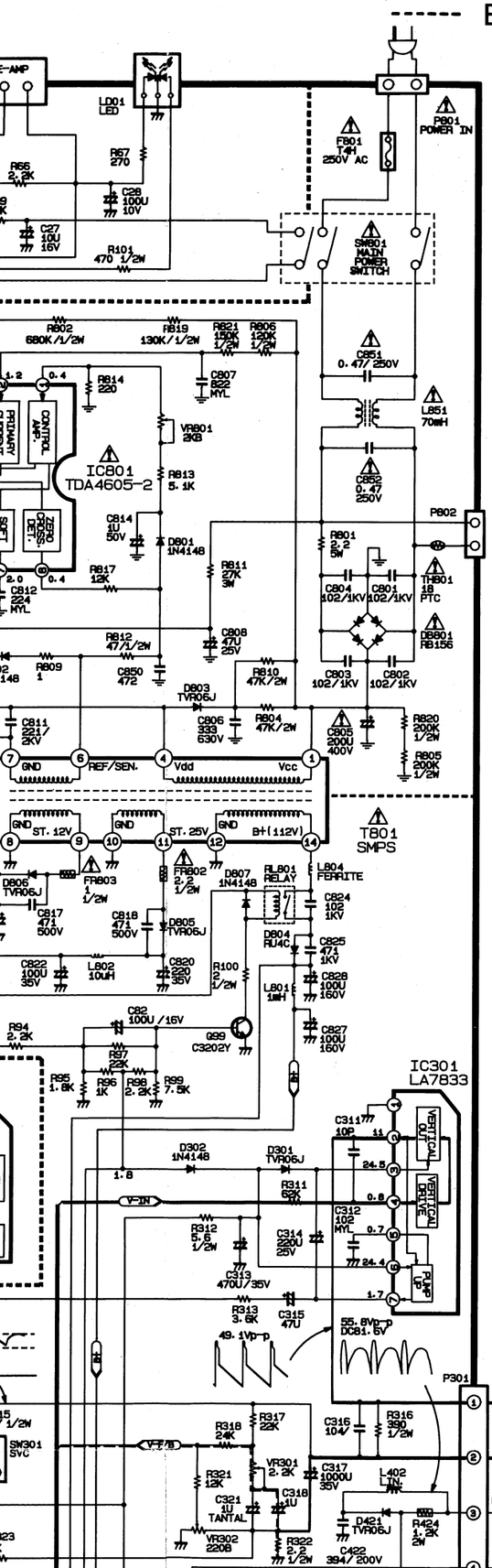
SCHEMATIC DIAGRAM (PC-31A)

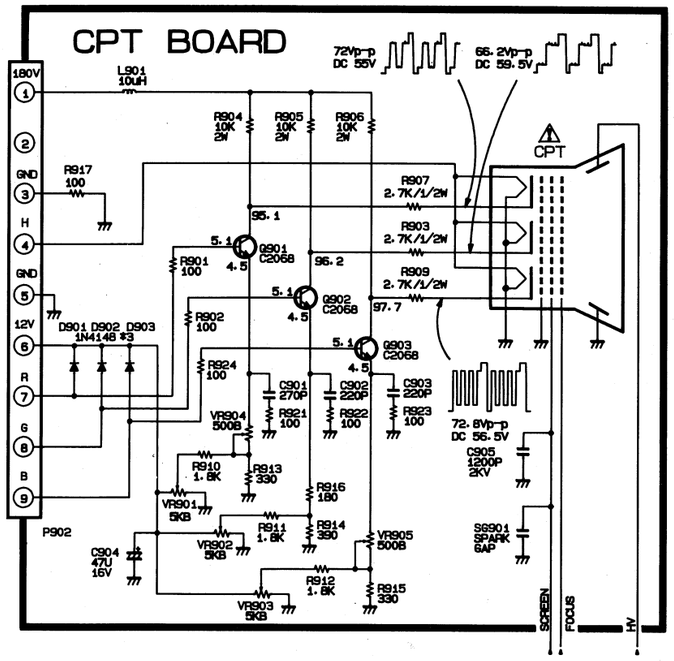


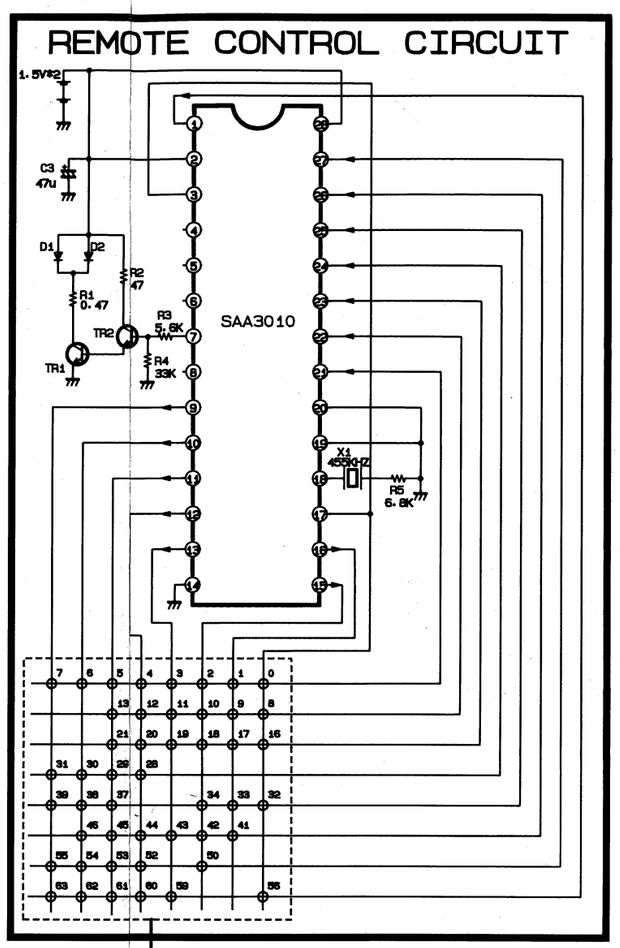
CVBS
EXT. CVBS
SOUND
EXT. SOUND
CHROMA
VERTICAL DRIVE
VERTICAL FEED BACK

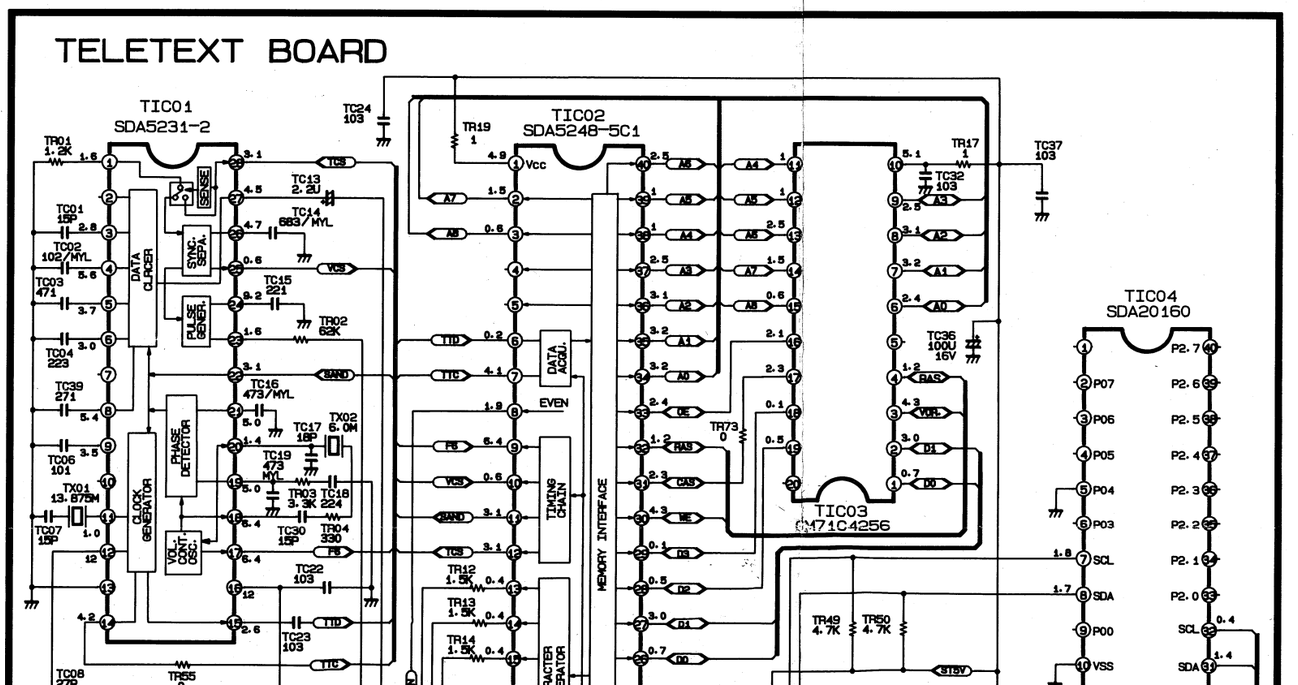
● THE TABLE OF INCH CONVERSION

CIRCUIT NO	14"	20"	21"	REMARK
C P T	A34KWK12XX	A48KWX12XX	A51KPD12XX	CPT
D Y	061M	151D	110F	153-
T401	064P	106C	194D	FBT(154-)
C421	772	862	822	MPP 1.6KV
C422	364	474	474	MPP 200V
L402	224L	224C	224C	COIL(150-)
L901	10uH	10uH	100uH	COIL
FR404	2	2	3.9	RES. FUSIBLE 1W
FR406	3	2	3	RES. FUSIBLE 1W
R05	1.5K	1.8K	1.8K	RES. FIXED 1/6W
R14	820	330	330	RES. FIXED 1/6W
R15	12K	6.8K	6.8K	RES. FIXED 1/6W
R20	2.7K	4.7K	4.7K	RES. FIXED 1/6W
R22	6.8K	4.7K	5.6K	RES. FIXED 1/6W
R317	22K	22K	27K	RES. FIXED 1/6W
R437	68K	56K	56K	RES. FIXED 1/2W
R438	82K	68K	68K	RES. FIXED 1/2W









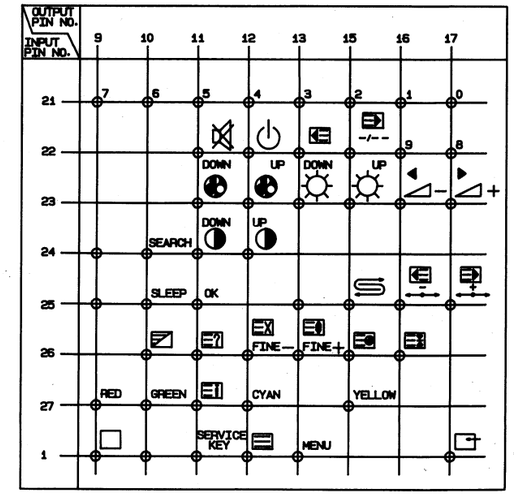
● THE TABLE OF RECEIVING SYSTEM

CIRCUIT NO.	B / H	B / G	D / K	I	REMARKS
R06	1.5K	1.3K	1.2K	1.5K	CARBON FILM RESISTOR
R281	-	-	22	-	
R206	-	-	1.5K	-	
R202	6.8K	6.8K	10K	6.8K	
L203	6.8UH	6.8UH	3.9UH	6.8UH	INDUCTOR
L204	33UH	15UH	5.6UH	8.2UH	INDUCTOR
C281	TIN WIRE	TIN WIRE	47pF	TIN WIRE	CAP. TUBULAR
C282	-	-	47u/16V	-	CAP. CE
C283	-	-	103p	-	CAP. TUBULAR
C284	-	-	18P	-	CAP. TUBULAR
C285	-	-	47P	-	CAP. TUBULAR
C525	-	-	0.1u 50v	-	CAP. MYLAR
C526	-	-	224J 50V	-	
C550	-	-	47U/16V	-	CAP. CE
C551	-	-	0.022u/50V	-	CAP. CERAMIC
C851,852	154 250V	474 250V	154 250V	154 250V	X-CAPACITOR
C853	TIN WIRE	4700/4KV	4700/4KV	TIN WIRE	Y-CAPACITOR
C854	2200/2KV	4700/4KV	4700/4KV	2200p/4KV	
Q21	DIA114ES	DIA114ES	DIA114ES	-	TRANSISTOR
Q22	DIA114ES	DIA114ES	DIA114ES	-	TRANSISTOR
Q23	DIA114ES	DIA114ES	DIA114ES	-	TRANSISTOR
IC281	-	-	LA7975	-	S-CONVERTOR
IC501	TDA8361	TDA8361	TDA8362B	TDA8361	JUNGLE
IC503	-	-	TDA8395/N1	-	SECAM
Z101	61966M	61966M	K1950	J1953M	SAW FILTER
Z201	TPS5.5M	TPS5.5M	TPS5.5M	TPS6.0M	FILTER TRAP
Z202	TPS6.5M	TPS6.5M	TPS6.5M	-	
Z203	5.5M	5.5M	6.0M	6.0M	FILTER BPF
Z281	-	-	CSB500	-	RESONATOR
T181	232B	232B	236D	236E	TUNER
		232C	-	-	TUNER (HYPER BAND)
J02	-	-	-	TIN WIRE	
J94	-	-	-	TIN WIRE	
J128	TIN WIRE	TIN WIRE	-	TIN WIRE	

● LANGUAGE OPTION
FOR TELETEXT IC (SDA20160:TIC04)

AREA / PIN NO	WESTERN EUROPE		EASTERN EUROPE	TURKEY
23	LOW(0)	HIGH(1)	LOW(0)	HIGH(1)
24	LOW(0)	HIGH(1)	HIGH(1)	LOW(0)
TIC02	SDA5248SC1		SDA5248SC2	SDA5248STR
PWB	111-K25A		111-K26B	111-K26C
REMARK	LOW(0) : GROUND		HIGH(1) : B+/OPEN	

● KEY MATRIX TABLE



NOTICE

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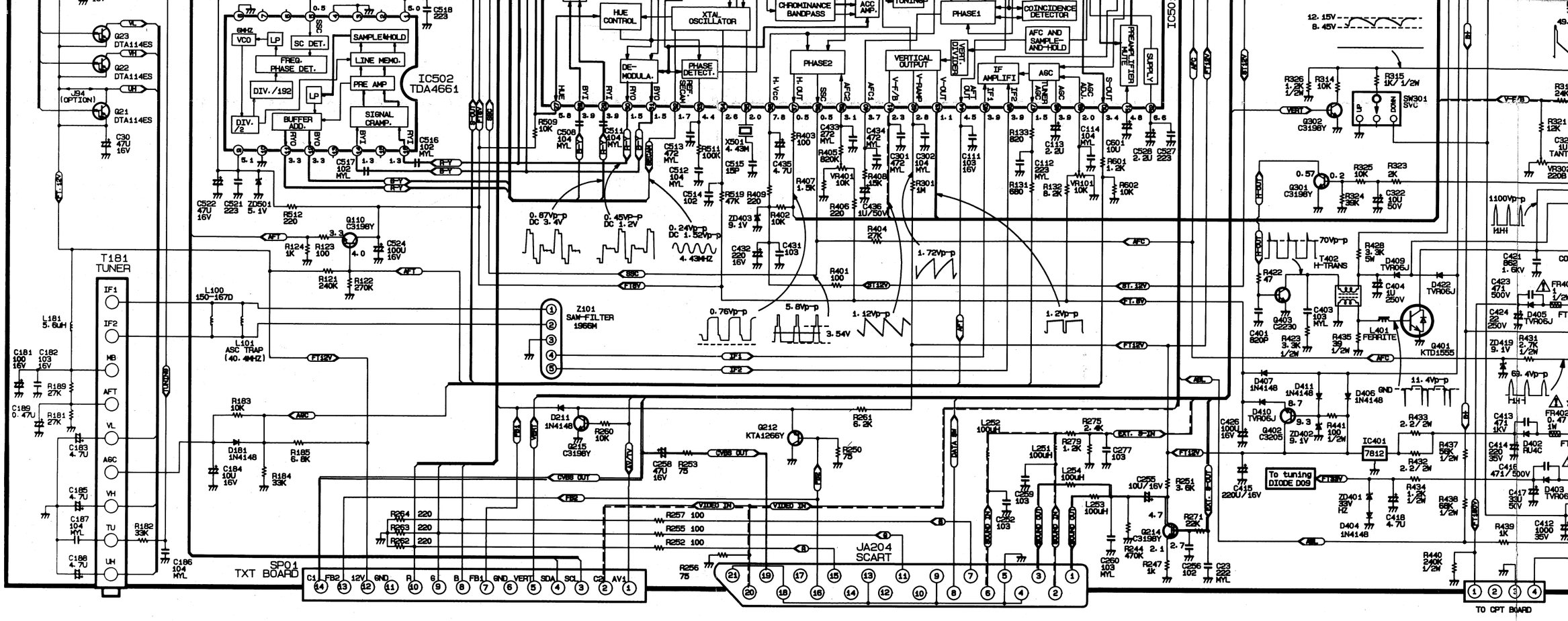
The components marked ⚠ conform to VDE or IEC guide-lines and are essential for safe operation of the set. while those marked ⚠ are required for correct operation. Use specified parts only when replacing.



■ TroubleShooting Guide

PRESET CONTROL
Brightness - Fully Up
Contrast - Fully Up
Colour - Fully Up
Volume - Mid range or adjust as need

DEAD SET (NO RASTER/NO SOUND)

- Check +B voltage at TP1 (J421)
  - 130 - 140V → Check stand-by 12V at C821 (+)
    - 0V → Check/Replace FR803, D806, L803
    - 7-9V → Check/Replace IC501
  - 112V (Normal) → Check heater elements of CRT are lighting or not.
    - No → Check/Replace FR404, FR406
    - Yes → Check the voltage at C415 (+)
      - 0V → Check/Replace FR402, D402, R432, R433, IC401
      - 12V → Check the voltage of pin10 of IC501
        - 0V → Check/Replace ZD402, Q402, D410
        - 8V → Check/Replace IC501
  - 0V → Check the rectified voltage of main power at C805 (+)
    - 0V → Check/Replace F801, DB801, R801
    - 250-380V → Check the voltage of pin6 of IC801
      - Less than 8V → Check/Replace R811
      - 8-15V → Check/Replace IC801, Q801 Check the secondary voltage are short.

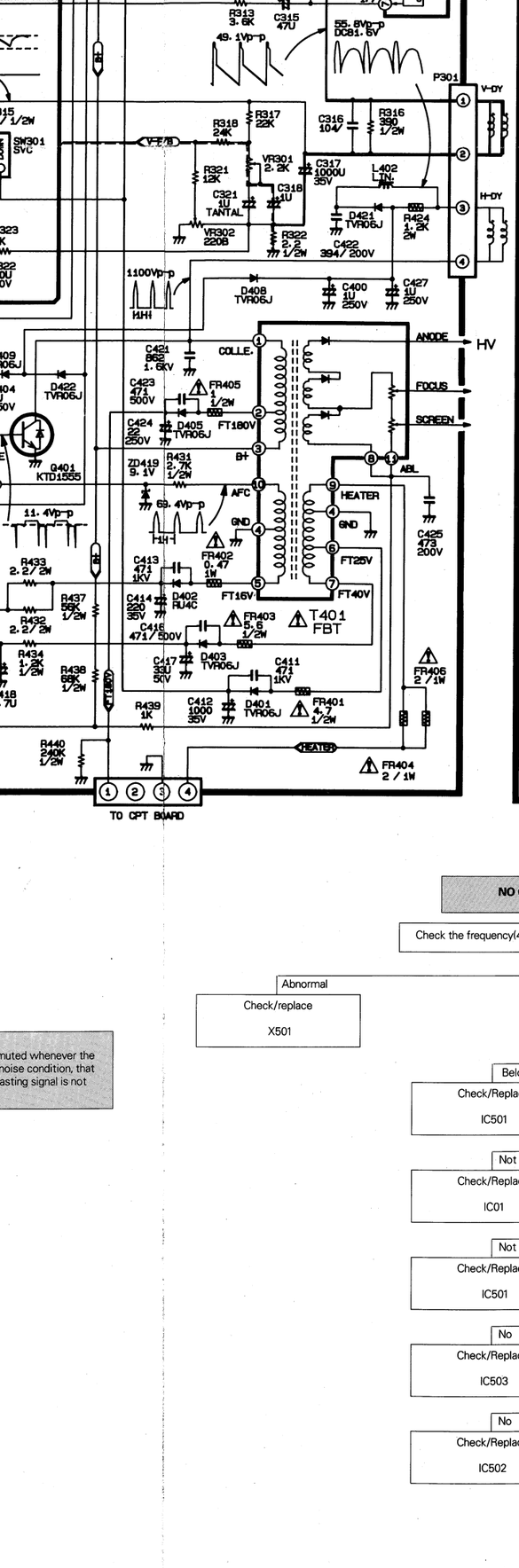
NO RASTER (SOUND OK)

- Check heater elements of CRT are lighting
  - No → Check the AC voltage at pin1 of P901 on CPT board.
    - 6.0-6.5Vrms → Check/Replace CPT
    - 0Vrms → Check/Replace FR404, FR406
  - Yes → The screen is blinking → Check/Replace IC501
    - Abnormal → Realign White Balance
    - Normal → Check the screen colour
      - White → Check the 180V line at C424 (+)
        - Abnormal → Check/Replace FR405, D405
      - R/G/B → Check the base voltages of Q901-Q903
        - 12V → Check/Replace D901-D903
        - 4 - 5V → Check/Replace R904-R906 or soldering condition on CPT board.
  - Yes → Retrace line is visible → Check the screen voltage(G2) alignment is correct or not.
    - Abnormal → Realign White Balance
    - Normal → Check the screen colour
      - White → Check the 180V line at C424 (+)
        - Abnormal → Check/Replace FR405, D405
      - R/G/B → Check the base voltages of Q901-Q903
        - 12V → Check/Replace D901-D903
        - 4 - 5V → Check/Replace R904-R906 or soldering condition on CPT board.

NO SOUND (PICTURE OK)

- Check the voltage of SMPS 25V at pin5 of IC601
  - Abnormal → Check/Replace FR802, D805, FR601
  - Normal (20-25V) → Check the voltage of pin16 of IC501
    - 0V → Check the soldering condition around IC601
    - 10-12V → Check/Replace Q501
      - Abnormal → Check/Replace IC01
      - Normal → Check the voltage of pin10 of IC501
        - 7-9V → Check the voltage of pin5 of IC501
          - 2-5V → Check/Replace IC601
          - Check whether the voltage is swing or not at the pin56 of IC01 according to changing volume up/down
            - Abnormal → Check/Replace IC01
            - Abnormal → Check/replace X501

NOTE:
Sound is muted whenever the screen is noise condition, that is, broadcasting signal is not found.



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Value of resistor, capacitor and inductor

1. Resistances are shown in ohm. K=1.000. M= 1.000.000.
2. Unless otherwise noted in schematic, all capacitor values less than 1 are expressed in mfd and the values more than 1 in pF.
3. Unless otherwise notied in schematic, all inductor values more than 1 are expressed in uH and values less than 1 in Henry(H).

Observation of voltages and waveforms

1. Voltages with VTVM from point to chassis ground. line voltage is 230Vac +/- 20% volts. (240Vac +/- 20% in ENGLAND, AUSTRALIA, NEWZEALAND) Signal pattern is colour-bar.
2. The schematic shown is represetative only.
3. All waveforms are taken using a wide band oscilloscope and a low capacity probe.
4. Check Fine tuning, AGC, Brightness, Contrast and Colour controls for best picture. make sure that colour, brightness are in mid-position and contrast is in 75%.

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NO COLOUR

Check the frequency(4.4Mhz) at pin35 of IC501

- Abnormal → Check/replace X501
- Normal → Check the voltage of pin27 of IC501
  - Below 5V → Check/Replace IC501
  - OVER 5.5V → Check whether the voltage is swing or not at the pin59 of IC01 according to changing colour up/down.
    - Not → Check/Replace IC01
    - Swing → Check whether R-Y and B-Y are out at pin30 and pin31 of IC501
      - Not → Check/Replace IC501
      - Swing → Check whether R-Y and B-Y are out at pin9 and pin10 of IC503
        - No → Check/Replace IC503
        - Yes → Check whether R-Y and B-Y are out at pin11 and pin12 of IC502
          - No → Check/Replace IC502
          - Yes → Check whether R/G/B is out at pin20 and pin19 and pin18 of IC501
            - No → Check/Replace IC501

NO PICTURE/NO SOUND (RASTER OK)

Check the voltage of TUNER MB(12V).

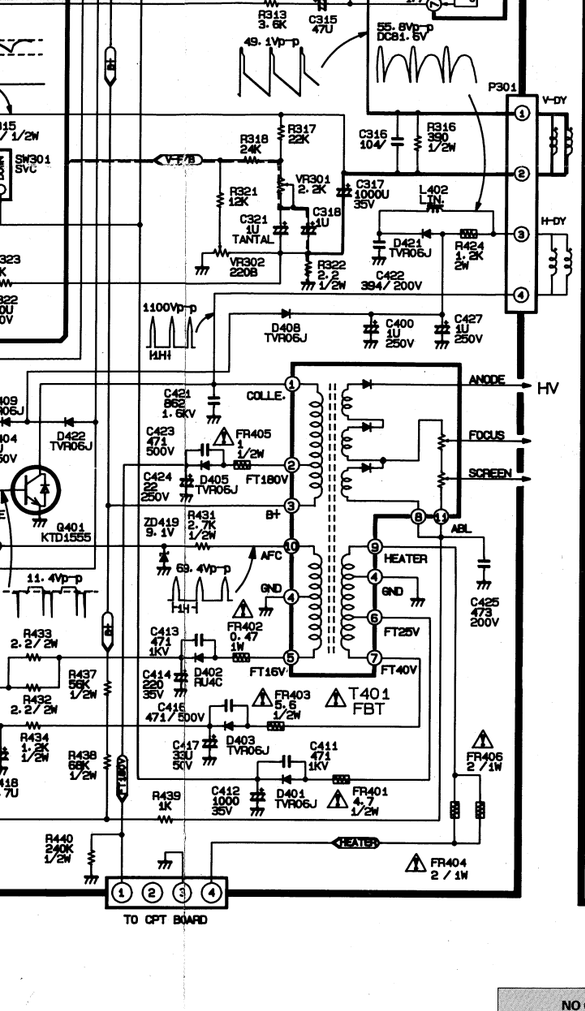
- 11.8-12.2 → Check the tuning condition
  - → Check the 33V at C418 (+)
    - → Check/Replace FR403, ZD401, D403
- 0V → Check/Replace FR402, D402 IC401
- Check/Replace Tuner

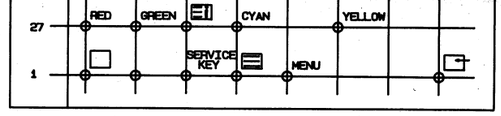
NO TELETEXT

Check the voltage 12V at TJ06

- Abnormal → Check the 12V line to be correct.
- Normal → Check the voltage of TC46 (+)
  - Abnormal → Check/Replace TIC07, TIC08
  - 4.8-5.2V → Check whether video signal is in at the pin27 of TIC01 or not.
    - No → Check whether video signal is in at the pin4 of TIC06 or not.
      - Yes → Check/Replace TIC06
      - No → Check the CVBS line.
        - Check/Replace TIC02, TIC04, TIC05 u-COM(IC01) Check all the connections of SDA, SCL
    - Yes → Check I²C Bus (SDA,SCL)
      - Yes → Check the FB1 at pin17 of TIC02
        - Yes → Check the R.G.B. connection from TIC02 of teletext to IC501 of main board. Check/Replace TQ01, 02, 03
        - No → Check/Replace TIC02

- If TELETEXT Sync. is not correct, the teletext picture moves to the left or right. In this case, check the characteristics of TC19 and TC30.
- If TELETEXT data error occurs, readjust channel memory or VCO (VIF & AFT) adjustment.





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P/N : 484-856A-S
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- Normal → Check the voltage of pin27 of IC501
  - Below 5V → Check/Replace IC501
  - OVER 5.5V → Check whether the voltage is swing or not at the pin59 of IC01 according to changing colour up/down.
    - Not → Check/Replace IC01
    - Swing → Check whether R-Y and B-Y are out at pin30 and pin31 of IC501
      - Not → Check/Replace IC501
      - Swing → Check whether R-Y and B-Y are out at pin9 and pin10 of IC503
        - No → Check/Replace IC503
        - Yes → Check whether R-Y and B-Y are out at pin11 and pin12 of IC502
          - No → Check/Replace IC502
          - Yes → Check whether R/G/B is out at pin20 and pin19 and pin18 of IC501
            - No → Check/Replace IC501

NO PICTURE/NO SOUND (RASTER OK)

Check the voltage of TUNER MB(12V).

- 11.8-12.2 → Check/Replace Tuner
- Check the tuning condition
- 0V → Check/Replace FR402, D402 IC401

Check the 33V at C418 (+)

Check/Replace FR403, ZD401, D403

NO TELETEXT

Check the voltage 12V at TJ06

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  - Abnormal → Check/Replace TIC07, TIC08
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